
Beyond Defense-In-Depth

Cost and Funding of
State and Local Government
Radiological Emergency Response
Plans and Preparedness in Support of
Commercial Nuclear Power Stations

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Radiological Emergency Response
Plans and Preparedness in Support of
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Manuscript Completed: October 1979
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Stephen N. Salomon

**Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555**



ABSTRACT

Inadequate, sporadic, uncertain and frustrating are words local, State and Federal officials use to describe the current hodgepodge funding approach to State and local government radiological emergency response plans and preparedness in support of commercial nuclear power stations. The creation of a "Radiological Emergency Response Plans and Preparedness Fund for State and Local Government" is offered as a preferred solution. Monies for the Fund could be derived from a one time Fee of \$1 million levied on the operator of each nuclear power station. Every five years, adjustments could be made in the Fee to assure full recovery of costs because of inflation, revised criteria and other cost related factors. Any surplus would be refunded to the utilities. Any State that has obtained NRC concurrence or is in the process could be reimbursed for previous expenditures up to two years prior to NRC concurrence. Concurrence in all State and local government plans is the objective of the funding program. The Fund should be administered by the Nuclear Regulatory Commission. For 40 States and 101 sites, the estimated national present value cost* is \$100 million to State and local governments for the period 1980 to 2000, assuming a discount rate of 10 percent and no inflation. Major component costs are for:

- NRC concurrence in plans and preparedness (exercises, training and resources) of all impacted State and local governments;
- Implementation of the 10- and 50-mile Emergency Planning Zones for all sites;
- The 21 high population density (and growth) sites, such as Indian Point (New York) and Zion (Illinois);
- Enhanced plans and preparedness involving Atmospheric Release Advisory Capability, and ring monitoring or some other offsite monitoring system; and
- Funding directors of local government radiological emergency response plans and preparedness.

Some related Federal costs include:

- Federal consultants to State and local governments; and
- Training, research (e.g., NOAA storm alert radio), regional plans for the 50-mile EPZ ingestion pathway, and public information.

The report also discusses actions by Federal and State agencies and points to long range considerations, such as a training institute, including transportation and non-commercial and other fixed nuclear facilities, where preparedness could be enhanced by a coherent funding mechanism. All recommendations are based on an inquiry by the Office of State Programs, NRC, into the historical and future costs and funding of radiological emergency response plans and preparedness at the State and local government levels and are derived from discussions with many local, State and Federal officials.

*See footnote on p. II-70.

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*Committee members are:

- . Conference of (State) Radiation Control Program Directors
 - James Montgomery, Colorado - Chairman
 - Sherwood Davies, New York
 - Aubrey Godwin, Alabama
 - Dave Snellings, Arkansas (now with Arkansas Power and Light Co.)

- . National Association of State Directors of Disaster Preparedness
 - Betty McClelland, Washington
 - E. Erie Jones, Illinois
 - Frank Mancuso, Connecticut
 - Alex Cunningham, California
 - (John Kearns represents Mr. Cunningham)

- . U.S. Civil Defense Council
 - George Brower, New York
 - Leland Daly, Washington
 - J. Howard Proctor, Alabama
 - William Bjorenson, Iowa

Stephen N. Salomon

Stephen N. Salomon
October 9, 1979

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PART I. EXECUTIVE SUMMARY

I. INTRODUCTION

Inadequate, sporadic, uncertain and frustrating are words local, State and Federal officials use to describe the current hodgepodge funding approach to State and local government radiological emergency response plans and preparedness in support of commercial nuclear power stations. Hampered by the lack of adequate funding, none of these officials would venture to say that all State and local governments would be completely responsive in the event plans and preparedness had to be tested in an accident.

"Beyond Defense-in-Depth" emphasizes the fact that many gaps remain in both plans and preparedness in spite of nearly a decade of effort and proposes a program of funding that brings State and local government radiological emergency response plans and preparedness into the concept of defense-in-depth, the basic safety philosophy of commercial nuclear power. Indicative of the lack of adequate plans and preparedness is the fact that only 14 States to date have NRC concurrence whereas another 18 States need it right now because they have an operating nuclear power station within their boundaries or are adjacent to a State with one nearby. Even those States with concurrence relate that there are many areas for improvement, especially at the local government level. Adequate funding is the main constraint because of the low priority assigned to plans and preparedness.

This report, begun in June 1978, looks into the future cost and funding of State and local governments; implications of NRC concurrence; the 10- and 50-mile Emergency Planning Zones proposed by a Nuclear Regulatory Commission/Environmental Protection Agency Task Force; the unique problems of 21 high population density (and growth) sites, such as Indian Point and Zion; the enhancement of State and local plans and preparedness by the use of the Atmospheric Release Advisory Capability (ARAC) and/or a system of monitor rings around the nuclear power station; and some of the implications of the Three Mile Island accident. The Findings and Analyses are presented in Part II. A preferred approach by the author is presented in Part III.

II. COSTS

A. State Governments

The costs of plans and preparedness to State governments was derived from a study of 14 States, nine of which have NRC concurrence. On this basis, a typical State with a complete plan and having NRC concurrence is estimated to incur the following costs:

Plan		
	Initial	\$50,000
	Update	5,000 per year
Preparedness		
	. Exercises	\$10,000 per year
	. Training	
	Initial	\$10,000
	Update	2,000 per year
	. Resources	
	Initial	\$100,000 (for radiological instrumentation and communications)
	Update	10,000 per year

The initial costs for a plan, exercise, training and resources (radiological instrumentation and communications) are estimated at \$170,000. Update costs are estimated at \$27,000 per year.

B. Local Governments

The costs of plans and preparedness to local governments are derived from a study of 24 sites. Nineteen of the sites have nuclear power stations in operation, fourteen that involve one-State planning and five that involve two-State planning. Five sites have nuclear power stations under construction and involve one-State planning.

On this basis, typically local government, with two jurisdictions and an adequate infrastructure, for a complete plan and having NRC concurrence is estimated to incur the following incremental costs:

Plan		
	Initial	\$20,000 (\$10,000 per jurisdiction)
	Update	2,000 per year
Preparedness		
	. Exercises	\$10,000 per year
	. Training	None - usually done by State
	. Resources	
	Initial	\$30,000 (for communications)
	Update	3,000 per year

The initial costs for a plan, exercise, training and resources (for communications) are estimated at \$60,000. Update costs are estimated at \$15,000.

C. Some Important Considerations that Affect Costs

The cost estimates for State and local government plans and preparedness, while not the last word, do represent reasonable approximations to the real costs in view of the uncertainties involved. These costs are low in comparison to the \$2 billion dollar cost of a modern, 2-unit nuclear power station.

Important considerations include:

1. Exercises,
2. Communications,
3. Radiation Monitoring,
4. Warning Systems,
5. Emergency Planning Zones, and
6. Local Technical Directors.

1. Exercises

An example of the variation in costs is illustrated by exercises. There is consensus of the essential values of exercises, i.e., verification of the operation of the plan, but not on the scope. The costs increase with the scope of the exercises. Those exercises that are limited to testing communications are the least expensive. Typical costs for full-scale field exercise based on historical costs may be as much as \$25,000 each for both State and local governments when vehicle operation and depreciation costs are taken into account. Because of the large cost and political considerations, some local governments have a policy of rotating full-scale exercises since most of the same emergency personnel are used to respond to any of the disasters envisioned, e.g., tornado, flood, fire, plane wreck, transportation spill, or nuclear power station accident. Economy in volunteer participation, such as the Red Cross, Civil Defense, and fire personnel, is important. Many local governments have found this method of cost spreading to be a reasonable cost-benefit compromise. To what extent the public should be involved in exercises is a highly debated subject. The annual cost to States for exercises could reach rather high amounts for States that expect to have a large number of nuclear power stations in the future, such as Alabama, California, Illinois and New York. Because of the anticipated high level of costs, State planners are seeking ways to limit the costs without impairing the quality of the annual exercise per nuclear power station.

2. Communications

Good communications are pointed out by many State and local emergency personnel as the most important and cost-effective element of emergency preparedness. Other than management intervention causing delay before prompt notification of the proper authorities, the greatest weakness in any of the notification systems reviewed is the off-duty notification. Basic communication systems are a necessity and cost about \$30,000. They contribute substantially to the costs for both State and local government.

3. Radiological Monitoring

States have reported historically a cost of \$70,000 to field a radiological assessment team with hand held instruments. Of growing interest is the possible use of

the Atmospheric Release Advisory Capability (ARAC). This U. S. Department of Energy computer service is a real-time capability to predict accurately and swiftly the effects on the population and the environment of an accidental release of radio-nuclides from a nuclear power station. It can provide the data base on which response plans could be developed, training could be based, and decisions by local, State, Federal and utility officials could be made during an actual emergency. Initial costs to State and local governments per station are estimated by the Lawrence Livermore Laboratories to be about \$100,000 and \$10,000 per year for maintenance. A ring system of monitors, proposed by Alabama and Illinois, is another system worthy of further study and could cost about the same as ARAC. This dual-purpose system creates an historical record for environmental monitoring and immediately alerts the State when a nonroutine release is measured.

4. Warning Systems

Many types of warning systems are used for alerting the impacted population in the event of an emergency because a universal warning system is lacking. Costs are going to vary considerably from relatively highly populated areas to relatively low populated ones. Since there is waning interest by State and local officials in the traditional siren warning system, the NOAA storm alert radio may become prominent in the future, especially in sparsely populated areas. A warning tone transmitted by the National Weather Service will trigger those radios into making an attention-getting signal and then warn and instruct the listener on the protective actions to be taken. The Tennessee Valley Authority is investigating this mode of warning in the vicinity of its nuclear power stations.

5. Emergency Planning Zones

Future cost impacts of the proposed Emergency Planning Zones (EPZs) concept is a central issue of State and local government radiological emergency response plans and preparedness in support of commercial nuclear power stations. Because of the political climate created after the Three Mile Island accident where there is higher priority attention to plans and preparedness, pressure is mounting for rapid implementation of the EPZs, and at the same time State and local governments are being squeezed financially.

For State government, there are four major factors that tend to increase costs: perceptions of the danger of nuclear power, need for multi-State planning and regional coordination, additional personnel requirements, and increased planning and preparedness requirements. Factors that tend to limit costs to States are the use of crisis relocation planners, integration of existing programs to measure routine emissions and weapons fallout, the use of capabilities derived from the Safe Drinking Water Act, and whatever capabilities derived from recommendations of the Federal Toxic Substances Strategy Committee. In the context of these uncertainties, the following cost estimates can be made for plans and preparedness:

• State Government

Plan

Initial	\$100,000
Update	10,000 per year

Preparedness

• Exercises \$20,000 per year

• Training

Initial	\$20,000
---------	----------

Update	4,000 per year
--------	----------------

• Resources

Initial	\$100,000 (radiological instrumentation and communications)
---------	---

Update	10,000 per year
--------	-----------------

The initial costs for the plan, exercise, training and resources total \$240,000.
Annual updating costs total \$44,000.

• Local Government (4 jurisdictions)

Plan

Initial	\$40,000 @ \$10,000 per jurisdiction
---------	--------------------------------------

Update	4,000 per year
--------	----------------

Preparedness

• Exercises \$20,000 per year

• Training None - Done by State

• Resources

Initial	\$60,000 (communications for 2 jurisdictions)
---------	---

Update	6,000 per year
--------	----------------

The initial costs for the plan, exercise, training and resources total \$120,000.
Annual updating costs total \$30,000.

• High Population Density (and Growth) Sites

Because high population density sites, those with population densities greater than 100,000 people within 10 miles, require a great deal more planning and preparedness compared to the typical site, the associated costs should be considerably greater. There are eight such sites:

<u>High Population Density Sites</u>	<u>Operating Status</u>	<u>State</u>	<u>Population within 10 miles</u>	
			<u>1970</u>	<u>2000</u>
1. Indian Point	Operating	New York	329,000	444,000
2. Zion	Operating	Illinois	282,000	441,000
3. Limerick	1982	Pennsylvania	281,000	420,000
4. Enrico Fermi	1981	Michigan	185,000	326,000
5. Beaver Valley	Operating	Pennsylvania	154,000	184,000
6. Three Mile Island	Operating*	Pennsylvania	121,000	183,000
7. Millstone	Operating	Connecticut	119,000	170,000
8. Bailey	1983	Indiana	103,000	166,000

*Unit 2 is not operating because of the accident.

This report flags another 13 sites that warrant special attention because of their rapidly growing populations within the 10-mile EPZ. The high growth population density sites are:

<u>High Growth Population Density Sites</u>	<u>Operating Status</u>	<u>State</u>	<u>Population within 10 miles</u>	
			<u>1970</u>	<u>2000</u>
1. Turkey Point	Operating	Florida	99,000	269,000
2. Seabrook	1983	New Hampshire	99,000	185,000
3. Shoreham	1984	New York	95,000	182,000
4. Oyster Creek	Operating	New Jersey	83,000	164,000
5. Perry	1982	Ohio	94,000	146,000
6. Midland	1980	Michigan	90,000	141,000
7. Duane Arnold	Operating	Iowa	79,000	120,000
8. Haddam Neck	Operating	Connecticut	57,000	117,000
9. St. Lucie	Operating	Florida	47,000	114,000
10. Salem	Operating	New Jersey	78,000	111,000
11. Trojan	Operating	Oregon	71,000	108,000
12. San Onofre	Operating	California	67,000	105,000
13. Catawba	1981	South Carolina	66,000	100,000

Based on experience gained to date, the costs for the high population density (and growth) sites should be considerably higher than the costs for the typical site to cover planning items; such as dynamic evacuation analyses and shelter surveys; and resources, such as communications and warning systems. A fair estimate for the additional present value cost of the eight high population sites is \$500,000 each. The present value cost of the high growth sites is \$250,000 per site.

6. Local Technical Directors

For the tasks described above, such as leading the planning; conducting exercises; and specifying, purchasing, and maintaining resources; local civil defense/emergency

services directors and their limited staff find the tasks very burdensome under current funding programs. This situation would be even more so for implementing the EPZs. To have more effective plans and preparedness, there should be a local technical director designated for local radiological emergency response plans and preparedness. This local technical director should receive training in all the NRC sponsored courses. Consideration should be given to have the technical director under the State civil service merit system. A salary range of \$10,000 to \$20,000 per year should be adequate to attract qualified people except in high living expense areas, such as New York City and Chicago, where a more suitable salary would be about \$30,000.

D. National Costs

For a variety of reasons, it is useful to gain a national perspective with regard to the costs to State and local governments for adequate radiological emergency response plans and preparedness in support of commercial nuclear power stations. The national costs are estimated for NRC concurrence, the EPZs, ARAC and/or offsite monitoring systems, the high population density (and growth) sites, and local technical directors of radiological plans and preparedness.

1. NRC concurrence

By the end of 1980, 36 States may be required to have concurrence. Assuming the above estimated costs for plans and preparedness based on current criteria, the initial costs for the 36 States is estimated to be about \$6.1 million and the annual costs to be about \$970,000. Three additional States are forecast to require concurrence by 1982 and one by 1987. For all 40 States, the national present value cost to State governments for the time frame 1980-2000 is \$16 million assuming a 10 percent discount rate and no adjustment for inflation.

The national cost to local government for plans and preparedness is estimated in a similar way. For the 58 sites in operation by the end of 1980, initial costs total \$3.5 million and the annual costs total \$870,000. The national present value cost to local government for the time frame 1980-2000 is \$16 million (at a 10 percent discount rate) for the 101 sites forecast to be in operation.

The combined national present value cost to State and local governments is \$32 million. Note that from this combined total, the initial cost of \$9.6 million is a substantial fraction (30 percent). This means that the front end costs are great compared to the combined national present value cost and results in difficult funding because a great deal of money has to be raised initially. Note that 14 States have received NRC concurrence and much of the cost has already been expended.

2. The Emergency Planning Zones

The national present value cost for EPZs to State governments (40 States) is \$24 million over the period 1980-2000 at a 10 percent discount rate. For all 101 sites, the national present value cost to local governments is \$32 million over the period 1980-2000 at a 10 percent discount rate. [High population density (and growth) sites are only partially included.] The combined present value cost to State and local governments is \$56 million. The incremental present value cost to State and local governments for implementing the EPZs is \$24 million, assuming all States and local governments have concurrence based on current criteria.

3. ARAC and/or Offsite Monitoring Systems

The Atmospheric Release Advisory Capability (ARAC) or the ring system enhances plans and preparedness for State and local governments, especially for EPZs. The national present value cost to State and local governments is \$16 million. Therefore, the total present value cost for 1980-2000 to State and local governments for the enhanced system is \$72 million.

4. High Population Density (and Growth) Sites

A fair estimate for the present value cost of all 21 high population (and growth) sites is \$8 million for the time period 1980-2000 at a 10 percent discount rate.

5. Local Technical Directors

Assuming a salary range of \$10,000 to \$20,000 per year, the national present value cost for 101 local directors is \$8 million to \$16 million for the time period 1980-2000. Assuming two local technical director for the eight high population density sites, at \$30,000 per year each, the present value cost would be increased by nearly \$3 million for a total of about \$20 million.

6. Summary

The following table summarizes the above national present value costs (millions of dollars):

Total	= NRC Concurrence	+ EPZ*	+ ARAC or Ring System	+ High Population Density and Growth Sites	+ Local Technical Directors	
State Government	16	8	}16	}8		
Local Government	16	16			20	
<hr/> Total:	100	= 32	+ 24	+ 16	+ 8	+20

*The incremental cost for EPZs.

III. FUNDING

A. State Governments

Emergency personnel in Civil Defense/Emergency Services, Divisions of Radiological Health and other State agencies are very much concerned with priority setting. This means how much money should be allocated for radiological emergency response plans and preparedness in support of commercial nuclear power stations and how quickly should the job be completed compared to the wide range of other activities in which the public's health, safety and welfare has to be protected. During the last few years, funding is flattening out for both Civil Defense/Emergency Services and Radiation Health. As a consequence, most States report that they are strapped for funds, yet are having to fulfill more requirements.

Because of the Three Mile Island accident, plans and preparedness are receiving higher priority treatment in many States. For example, Oregon and Illinois signed into laws, in July and September 1979 respectively, funding programs for radiological emergency response plans and preparedness. Monies are raised by assessing fees on the operating utilities. Illinois is creating a "Nuclear Safety Emergency Preparedness Fund." Some other States, such as California and New Jersey, are trying to get similar legislation passed.

B. Local Governments

Local governments are recognized by the States as having the first line of official public responsibility to prepare for and to respond to most emergencies. Nevertheless, many local governments, but not all, are finding themselves in a funding squeeze similar to or greater than State governments. Some major findings are:

- . For the majority of jurisdictions, there appear to be adequate tax revenues generated from a nuclear power station in the host jurisdiction. Budget managers prefer to allocate most funds to other projects perceived to have higher priority than local radiological emergency response plans and preparedness. The consequence is that local Civil Defense/Emergency Services are not always completely funded for plans and preparedness.
- . The assurance of adequate funds to local Civil Defense/Emergency Services for radiological emergency response plans and preparedness for neighboring impacted jurisdictions is considerably less secure. Insecurity prevails even though some tax benefit is derived indirectly by means of taxes on wages spent and business transactions that result from the construction and operation of a nuclear power station. As in the case of the host jurisdiction, the main problem is the setting of priorities.
- . The assurance of continuity in funding local Civil Defense/Emergency Services for plans and preparedness is open to question because in the long run, over a

number of years, tax revenues and indirect sources of public funds derived directly or indirectly from the nuclear power station may begin to decline. As a consequence, local budgets would become stretched and radiological emergency response plans and preparedness may suffer an even lower priority than they currently enjoy.

The recently passed Oregon Act assures funding for Columbia County government in Oregon but not for Cowlitz County, Washington, that is equally impacted by the Trojan nuclear power station sited in Oregon. The Illinois Act seeks to recover State costs. County government is not assured of any funds. However, Illinois officials intend to address local government funding in 1980.

C. Future Alternative Funding Mechanisms

The aftermath of Proposition 13 in California proved that there was not a tax rebellion across the country but rather a heightened awareness that local, State and Federal government officials must use taxpayer dollars more efficiently and effectively in the future. As a consequence, to survive inflation and spending restrictions, budget managers in the local, State and Federal government are scrutinizing ever more closely funding for radiological emergency response plans and preparedness in support of commercial nuclear power stations. Three Mile Island is heightening this awareness. Even though plans and preparedness appear to be gaining higher priority attention, this activity may still be eliminated because of the lack of funds. This report reviews a large number of future alternative funding mechanisms. In addition to the current hodgepodge approach which is unsatisfactory, the most helpful ones explored are mechanisms not requiring additional Federal funds; ones that would require some additional Federal funds; and mechanisms requiring NRC funding. An approach that the author prefers is presented below. (Part III of this report provides a fuller explanation.)

IV. A PREFERRED APPROACH

A. Rationale

1. Risk

Risk on a relative basis provides the reason for determining the governmental entity that should receive priority funding. Local governments are recognized by the States as having the first line of official public responsibility for and to respond to most emergencies because of the proximity to nuclear power stations.

In general, the high population density and growth sites, such as Indian Point, New York, and Zion, Illinois, deserve higher priority funding compared to low population density and growth sites. However, those low population density sites which lack adequate infrastructure should receive rather high priority funding as well.

For those States without NRC concurrence, adequate plans and preparedness are not demonstrated. For this reason, the local populations nearby nuclear power stations in those States without NRC concurrence could be at greater risk compared to those States with concurrence. Therefore, another priority should be to fund those States without concurrence. Concurred States may require a lower priority of funding in order to retain concurrence. All States that have concurrence should be compensated.

2. Efficiency

A proper funding balance should be achieved between prevention of an accidental release of radioactive materials by means of defense-in-depth inside the fence and radiological emergency response plans and preparedness outside the fence, "beyond defense-in-depth." Currently, the primary objective of defense-in-depth is the prevention of accidental releases of radioactive materials from the site by means of careful design, construction and operation of the nuclear power station and thoughtful selection of its site. The basic safety philosophy of commercial nuclear power stations, defense-in-depth, should be enlarged to include State and local government radiological emergency response plans and preparedness. The keys to this are enforceable regulation and funding.

Ideally, the Congress must make a finding and declaration that the national interest requires adequate local and State government radiological emergency response plans and preparedness otherwise the NRC operating license held by the licensee of the nuclear power station would be withdrawn for the case of an operating station or the license would not be issued for the case of a new station. The Congress should assure that the funds are available to accomplish this task. A preferred approach is the establishment of a trust fund for State and local government radiological emergency response plans and preparedness as described in this report. Alternatively, the Nuclear Regulatory Commission could make such a similar finding and declaration for the purpose of assuring the health and safety of the people in the vicinity of nuclear power stations and protecting the environment. This could be accomplished by means of the expedited rulemaking procedure that is now in progress.* Such a finding and declaration by either Congress or NRC are needed in view of the atmosphere of uncertainty that shrouds the safety of nuclear power stations.

3. Equity

The funding mechanism should have the objective to internalize the external costs of local and State governments. Costs for plans and preparedness should be paid ultimately by the consumer of electricity which is viewed as the most equitable way of doing business. This can be accomplished by levying a fee on the operator of the

*"Adequacy and Acceptance of Emergency Planning Around Nuclear Facilities, Advance Notice of Proposed Rulemaking," Federal Register, Vol. 44, No. 138, Tuesday, July 17, 1979, pp. 4183-4184.

nuclear power station, who in turn raises the money from the utility owners who in turn pass it on to the consumers after being approved by a public utility commission. The estimated cost for the average residential customer would be approximately one cent per month. The fee method is already used by Oregon and Illinois in their laws and is in concert with the fees paid by the licensee to NRC for Construction Permits and Operating Licenses. Furthermore, this type of funding is embedded in various laws for liability, such as the Price-Anderson Act for nuclear accident liability and section 311 of the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) for recovery of clean up costs from accidents involving oil and designated hazardous substances.

To assure that States that have earned or are in the process of earning NRC concurrence are treated fairly, State and local governments should be reimbursed for their funds disbursed for plans and preparedness. The earliest time frame for reimbursement could commence from two years prior to the date of NRC concurrence. The principle of reimbursement allows the Federal program to parallel programs of the State without any impediment. This principle is established in the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) in section 206 that deals with reimbursement grants to State and local governments for construction of treatment works.

Funding to State and local government should be conducted on a cost recovery basis. If additional funds are needed, they should be recovered from the operating utilities. Any surplus funding should be redistributed to the operating utilities. Cost should be determined by the impacted State and local governments. For example, the 10- and 50-mile Emergency Planning Zones would provide the basis for identifying the impacted governments. In no case, should a situation occur that western utility operators would be paying for plans and preparedness in the East.

B. Funding Legislation

NRC should draft and propose legislation that would create the Radiological Emergency Response Plans and Preparedness Fund for State and Local Governments. The main provisions should include the following:

1. A Radiological Emergency Response Plans and Preparedness Fee of \$1 million per nuclear power station should be charged to the operator of the station. All operating stations should be charged initially. Others should be charged 2 years before operation. The Fund would total \$75 million by the end of 1980. Alternative arrangements on the fee schedule should be made when it is known what the initial costs for plans and preparedness are for particular nuclear power stations.
2. The Fees should be deposited in the U.S. Treasury in an interest bearing account. The details of the account would be worked out by the Secretary of the Treasury in consultation with the Chairman of the Nuclear Regulatory Commission. The

required money for State and local plans and preparedness should be withdrawn by NRC by means of the Congressional appropriations procedures. A detailed annual report should assist in Congressional oversight of the funds. State and local governments should report annually to make full account of their expenditures.

3. Every 5 years, adjustments should be made in the Fee to assure full recovery of costs because of inflation, revised criteria, and other cost related factors. The Fee would be specific to each nuclear power station. Any surplus should be refunded to the operating utilities at 5 year intervals.
4. Those States that have NRC qualified programs of their own, i.e., similar in effectiveness to the national program, should not have to participate. Therefore, the operators of the stations located in those States should not have to pay two fees. Such a provision should be an incentive for States to create and manage their own programs.
5. Any State that has obtained concurrence or is in the process of obtaining concurrence should be reimbursed for previous expenditures up to two years prior to NRC concurrence. The rebate should be to the source, such as the State or local government.
6. Rules should describe how much State and local government can request in any one year. The limits are initially determined by the costs in this report above and must conform to the guidance for State and local government plans and preparedness as described in the principal NRC planning document, NUREG 75/111 or any subsequent document or regulation.
7. The objective of any organization that administers the Fund should be the timely distribution of funds to qualified local and State governments without placing burdensome requirements on any party, especially on local and State governments. Among the many candidate organizations that could meet this requirement, NRC, Federal Emergency Management Agency (FEMA) and the boards of the interstate compacts seem to be the most promising. Based on a review of the principal advantages and disadvantages of each, NRC offers the most advantages.
8. The Federal Grant and Cooperative Act of 1977 (Public Law 95-224) must be followed to distinguish Federal grant and cooperative agreement relationships from Federal procurement relationships. Pursuant to this act, the Director of the Office of Management and Budget shall be making recommendations to the Congress by no later than February 3, 1980, on the most desirable means of implementing Federal assistance.

C. Other Actions to Enhance Plans and Preparedness

There are a number of actions that NRC, FEMA, EPA and FDA can take to improve local and State plans and preparedness. They are described in Part III. Some long range considerations worthy of note are:

1. Training Institute

The creation of an Institute for Radiological Emergency Response Planning and Preparedness that could provide a single coordinated curriculum for State and local officials should be considered for the long range.

2. Including Transportation and Other Facilities in the Fund

An appropriate addition to the "Radiological Emergency Response Plans and Preparedness Fund for State and Local Governments" may be the inclusion of spent fuel shipments, away-from-reactor storage, and other non-commercial and fixed nuclear facilities.

3. Addition of Federal Costs

The primary objective of this report is to address the cost and funding of State and local government radiological emergency response plans and preparedness in support of commercial nuclear power stations. State and local government costs over a period of 20 years are proposed to be recovered by a Fee of \$1 million that is levied on the owner of the nuclear power station. However, future consideration should be given to the possibility of recovering costs incurred by the Federal government for training, plan and exercise review, and other Federal costs related to State and local costs.

PART II. FINDINGS AND ANALYSES

CHAPTER 1. METHODOLOGY

Over the years, numerous local government officials asked the Office of State Programs about the possibility of NRC funding of local government activities related to radiological emergency response plans and preparedness that are necessary for the protection of the public health and safety in the vicinity of commercial nuclear power stations. According to these officials, they are unable to raise the required funds at either the local or State levels of government, or from the operating utility. The issue of funding local government primarily, and State government to a lesser extent, was flagged a couple of years ago by the Interorganizational Advisory Committee on Radiological Emergency Response Planning and Preparedness of the Conference of (State) Radiation Control Program Directors. This committee has representatives from the Conference of Radiation Control Program Directors, the National Association of State Directors of Disaster Preparedness and the U.S. Civil Defense Council. Also, the U.S. General Accounting Office recognized the importance of funding in a 1976 report (Ref. 1). Another aspect of growing importance is the awareness of the funding difficulties related to the Emergency Planning Zones concept advanced by the Nuclear Regulatory Commission/Environmental Protection Agency Task Force (Ref. 2).

To better appraise the funding issue, the Office of State Programs decided that a grass roots approach of visits with local and State officials engaged in planning and preparedness activities would be the most fruitful way to proceed. Dr. Stephen N. Salomon, Office of State Programs, accepted the assignment and responsibility for traveling to the various State and local officials, writing a report and submitting his findings and recommendations.

Accordingly, contact was made with the person in representative States responsible for radiological emergency response activities - either the civil defense/emergency services or radiological health officer. In addition, the person in each State appointed by the governor to represent the State in NRC activities, the State Liaison Officer, was consulted. As a result, key State and local government officials (such as county commissioner, police, fire, and health personnel) were identified who were willing to participate in meetings set up at the State and local levels. Sometimes utility representatives participated. The time frame for field meetings was July 1978 through January 1979.

The main thrust of these meetings in State capitals and local communities was to explore the historical and future costs of radiological emergency response plans and preparedness, to identify any deficiencies in current programs, to discuss current funding problems and successes, and to investigate future alternative funding mechanisms. (A guide for the inquiry on which this report is primarily based is found in Appendix A). Because of NRC travel budget limitations, California was not visited. Instead, written responses to the guide were supplied by State and local officials and were supplemented by telephone conversations.

The States selected were chosen on the basis of regional diversity to illuminate particular known planning issues, such as the high population densities nearby Indian Point close to New York City and Zion near both Chicago and Milwaukee, interstate coordination, and investor-owned, public, and Federal utility system cooperation with State and local governments. The selected States represent both those that have received NRC concurrence as well as others that have not. More attention was focused on NRC concurrence States* - California, Connecticut, Delaware, Florida, New Jersey, New York and Washington - since it is generally regarded that these States have more complete State and local plans and preparedness. These States might serve as models for States that have not yet received concurrence, perhaps for the reason that they have somewhat less developed plans and preparedness. (An explanation of the concurrence process is provided in Appendix B.) The study of both kinds of States allows some testing of the above stated belief. The nonconcurrence States that were visited include: Alabama, Illinois, Oregon, Tennessee and Wisconsin. In all, 12 States were studied at both State and local levels. Less intensive study was conducted with some representatives of four other States - Arkansas, Colorado, Georgia, and Iowa.

At the local government level, officials were contacted who represent the communities supporting the radiological emergency plans and preparedness related to the commercial nuclear power stations located on 24 sites throughout the country. These contacts are believed to be a fairly representative sample out of the 64 sites that have nuclear power stations either in operation or under construction and will require plans and preparedness by the end of 1981. (See Appendix C, Table C-1, for details.)

The draft report was completed on Tuesday, March 27, 1979, the day before the accident at Three Mile Island Nuclear Power Station - Unit 2, near Harrisburg, Pennsylvania. No changes were made in the draft report as a result of the accident on the assumption that any changes would be premature and that a baseline study would be most useful. Accordingly, the printing schedule for March 30, 1979 was not interrupted.

In view of the accident and related events at Three Mile Island, timely review of the draft report was requested from a number of parties including:

- Office Directors, U.S. Nuclear Regulatory Commission;
- Federal Interagency Central Coordinating Committee (Radiological Emergency Preparedness);
- Interorganizational Advisory Committee on Radiological Emergency Response Planning and Preparedness of the Conference of (State) Radiation Control Program Directors;
- Mr. Gordon Vickery, Acting Director, U.S. Federal Emergency Management Agency (FEMA);
- Mr. J. Dexter Peach, Director, Energy and Minerals Division, U.S. General Accounting Office;

*South Carolina and Kansas have concurrence but were not studied. Alabama, Iowa and Arkansas received concurrence on February 9 and 27, and May 3, 1979, respectively, which is after field meetings were completed. Nebraska received concurrence on September 21, 1979, and Virginia in October 1979.

- All State and local governments participating in the study;
- Various government associations;
- Utility industry;
- Public interest groups; and
- Anyone requesting a copy.

Altogether, almost 400 copies were distributed.

The written comments received are displayed in Appendix E. This final report attempts to revise, clarify, resolve and highlight the issues of most concern.

In addition, this report updates information where possible. The impact of the Three Mile Island accident of March 28, 1979 is addressed to the greatest extent. Supplemental information that could enhance plans and preparedness should become available in time from the President's Commission on the Accident at Three Mile Island (called the Kemeny Commission after its chairman, John G. Kemeny, President, Dartmouth College), and investigations by Congress, the Nuclear Regulatory Commission, States, industry and other parties.

CHAPTER 2. COSTS TO STATE GOVERNMENTS

BACKGROUND

The historical costs to State governments for radiological emergency response plans and preparedness in support of commercial nuclear power stations are not well known. They may be characterized overall as approximations and well educated guesses, with some costs based on hard numbers and others on soft numbers. Furthermore, the existing literature on the subject is sparse.

The U.S. General Accounting Office (GAO), in support of its report, "Areas Around Nuclear Facilities Should Be Better Prepared for Radiological Emergencies," March 30, 1979 (Ref. 3), used questionnaires to try to ascertain State budgets on peacetime radiological emergency response planning. Twelve States of the 45 States responding to the questionnaire (50 States plus the District of Columbia and Puerto Rico were queried) stated that more than \$500,000 is spent annually for all types of emergency planning. Twenty-nine States spend less than \$250,000 annually. These monies include State contributions in addition to Federal monies from agencies, principally the Defense Civil Preparedness Agency and the Federal Disaster Assistance Administration. Thirty-nine States spend less than 20 percent of their State's emergency planning resources on peacetime radiological emergency response planning. Generally speaking, the GAO found that States could not easily give an exact breakdown of the amount of their budgets going for peacetime radiological emergencies.

The Defense Civil Preparedness Agency, whose main objective has been preparing for civil defense activities related to nuclear wartime emergencies, has contributed heavily to the States and local governments that rely in part on these resources for radiological emergency response plans and preparedness in support of commercial nuclear power stations. Estimated costs of programs for FY 1979 are shown in Table 1.

Even though the Federal government has supported the States since 1950, the Civil Defense program is far from complete. Indicative of this status is the fact that only 19 States have full-time State Radiological Defense Officers whose main function is to administer the wartime radiological emergency planning and preparedness functions in the State.

Preparedness Development and Improvement Grants have been awarded to States by the Federal Disaster Assistance Administration under enactment of the Disaster Relief Act of 1974 (Public Law 93-288). Some \$13.8 million have been obligated to 56 States, commonwealths, and territories as of June 30, 1979. About \$11.8 million has been disbursed. Generally, there is an award up to \$250,000 per State to plan for peacetime man-made and natural disasters. There is a grant of up to \$25,000 for improving, maintaining and updating State disaster assistance plans. The \$25,000 grants are to be matched by the States. These Federal funds have been used by States only for indirect support of the planning effort related to radiological emergency response plans and preparedness.

TABLE 1. ESTIMATED COSTS OF PROGRAMS FOR DCPA -- FY 1979.

<u>Programs</u>	<u>Cost</u>
Warning and Detection ¹	\$12.0 million
Emergency Operations ²	5.4
Financial Assistance to States ³	36.8
Management ⁴	22.8
Shelters ⁵	10.5
Emergency Operating Centers ⁶	3.8
Research and Development ⁷	<u>5.2</u>
Total Obligations:	\$96.5 million

Source: The Budget of the U.S. Government, Fiscal Year 1979

See footnotes for definitions of programs.

1. Warning and detection - Provides for the operation, maintenance, and continuing development of the nationwide emergency warning system and the distribution of radiological defense equipment to develop and maintain an effective detection and monitoring system.
2. Emergency operations - Provides for the support of those activities which are required to develop and maintain an optimum capability to perform essential actions in emergency periods to enhance survival probabilities.
3. Financial assistance to States - Provides grants to State and local governments to assist them in meeting their responsibilities under the Federal Civil Defense Act of 1950, as amended.
4. Management - Provides for the administrative expenses; that is, salaries, travel, and supporting costs for the management and administration of the national civil defense program.
5. Shelters - Provides for the development of a nationwide inventory of fallout shelters and plans for their use in emergency periods to enhance survival; planning for the crisis relocation of people and attendant care and protection.
6. Emergency operating centers - Provides matching grants to State and local governments as authorized by section 201(i) of the Federal Civil Defense Act for the design, construction, and equipping of State and local emergency operating centers and the procurement and installation of related capital equipment for such civil defense supporting systems as warning and communications.
7. Research and development - Provides for improvements of the technical basis for ongoing and potential civil defense programs and operations.

The Federal Preparedness Agency has advised and assisted in the formulation, development and coordination of national civil preparedness policies, including civil crisis preparedness; conflict preparedness; research, development, and program coordination; and stockpile acquisitions and disposals. Assistance to State and local governments is limited to fostering participating in preparedness programs. No funds have been identified that are awarded to State and local governments.

The States' ability to manage disaster situations has been hampered because of a lack of comprehensive national policy for the management of natural, man-made, and attack emergencies along with a dispersion of Federal responsibilities among numerous Federal agencies. As a result, the National Governor's Association adopted a policy statement calling for a national policy and consolidation of Federal emergency preparedness and response services. Accordingly, with Presidential support, the Disaster-Preparedness Reorganization Plan was passed. The new Federal Emergency Management Agency (FEMA) came into existence on April 1, 1979 on orders of the President.

Of primary interest from the point of view of costs to State governments of radiological emergency response plans and preparedness for commercial nuclear power stations, the following agencies have been transferred to FEMA:

- Defense Civil Preparedness (from DOD);
- Federal Disaster Assistance Administration (from HUD); and
- Federal Preparedness Agency (from GSA).

Although the only agencies that began operation under FEMA as of April 1, 1979 were the U.S. National Fire Prevention and Control Administration (from Commerce) and the Federal Insurance Administration (from HUD), the other agencies that began operation in July 1979 are DCPA, FDAA, FPA; the Dam Safety Coordination, Earthquake Hazard Reduction Program, the Consequences Management in Terrorism, and the Warning and Emergency Broadcast - all from the Executive Office of the President; and the National Weather Service Community Preparedness Program (from Commerce) (Ref. 4).

With FEMA, a better accounting of costs to States for radiological emergency response plans and preparedness may become feasible.

OFFICE OF STATE PROGRAMS INQUIRY

Because of the lack of existing cost data, the Office of State Programs is conducting an inquiry into the costs to the States for radiological emergency response plans and preparedness in support of commercial nuclear power stations. This is of special importance in view of the NRC-EPA Task Force proposal to implement the Emergency Planning Zones (EPZs) concept.

The costs to State governments are most conveniently separated into two categories - plans and preparedness. Planning costs include manpower, travel, secretarial support, printing of

maps and copies, training and education, and miscellaneous costs such as postage and telephone calls. Preparedness costs include the costs of exercises, training, and emergency resources. The components of these vary considerably and are discussed on a case-by-case basis. Both planning and preparedness have initial costs and updating costs in order to keep planning and preparedness at maximum effectiveness. The following discussion first deals with historical costs that the States have incurred and is followed by estimates of some of the costs that the States anticipate for the near future.

PLANS - HISTORICAL COSTS

The historical costs to the States for plans is summarized in Table 2 and are given in detail in Exhibit 1 at the end of this chapter. Most States do not keep good records on manpower and other costs involved in such activities so a good deal of estimating is done. The costs for initial plans vary from a low value of about \$20,000 for Alabama, Connecticut, Florida, Illinois, Oregon and Wisconsin to a high of about \$100,000 for California. Arkansas, Colorado, New York, Washington and maybe Delaware, New Jersey and Tennessee have each incurred costs of about \$40,000. The primary component of cost is manpower of the lead agency, either the health department or civil defense/emergency services department. State costs are heavier if the State government contributes substantially to the local effort. Examples of such States are Alabama, Colorado, New York, and Washington.

The updating costs are usually smaller than initial planning costs. For the States of Alabama and Washington, updating costs are a significant part of the initial cost. The apparent reason is that new power stations are being added to the plans.

Time did not permit the development of detailed estimates of the planning costs for the States of Connecticut, Delaware, New Jersey and Wisconsin. (Note that Connecticut had considerable planning assistance from Northeast Utilities.) Nevertheless, conversations with representatives of these States reveal that considerable manpower was put forth in the various departments of civil defense, health and environmental protection. It is reasonable to assume that these States have expended at least \$20,000 each in the planning effort. More than likely, Delaware and New Jersey have expended \$30,000 each.

PREPAREDNESS - HISTORICAL COSTS

There are three main categories of preparedness - exercises, training and resources. Estimates of the historical costs to date for 14 States are given in Exhibit 2. Table 2 summarizes the main categories. The amount of detail provided by the States varies considerably. Since the estimates are not comprehensive, they may be viewed as somewhat on the low side. Nevertheless, most likely no major item was omitted.

1. Exercises

From a review of the various States, it appears that an exercise costs the States from \$5,000 to \$15,000. The variance seems to depend mostly on the scale of the exercise and the number of State agencies involved.

TABLE 2. HISTORICAL COSTS TO THE STATES FOR RADIOLOGICAL EMERGENCY RESPONSE PLANS AND PREPAREDNESS IN SUPPORT OF COMMERCIAL NUCLEAR POWER STATIONS (thousands of dollars)

	Ala. ^a	Ark. ^a	Calif. ^a	Colo.	Conn. ^a	Del. ^a	Fla. ^a	Ill.	N.J. ^a	N.Y. ^a	Ore.	Tenn.	Wash. ^a	Wis.
<u>Plan</u>														
Initial	22	42	100	42	20	30	20	20	30	45	25	30	41	20
Update	18	1.4	6	5.1						4			19	
<u>Preparedness</u>														
Exercises (annual)	12 ^b	4.6	40.5 ^c	5.8	25	25			25	26 ^b	35 ^d 50 ^e		See Oregon	
Training														
Initial		48	18	1				30		23			8	
Update		5	1	2.3										
Resources														
Initial		115	2	23		2.2	70	70	68	10	10			
Update		10		1.1		0.3	10			0.6	9			

^aNRC concurrence

^bFor 2 sites

^cFor 3 sites

^dTrojan-1975

^eTrojan-1977 include Washington Federal and local

New Jersey reported a high of \$25,000 for the exercise at Salem, when amortization of equipment was included. Connecticut estimated \$25,000 for a comprehensive exercise at Millstone 1 and 2. Note that Washington's and Oregon's estimate are combined and include Federal and local government participation.

2. Training

The cost to States for training varies considerably with the scope of the program. It appears that only Arkansas, California, Illinois and New York incurred relatively substantial costs for their programs (in the tens of thousands of dollars). The other States either do not have their own programs, or they are relatively modest.

3. Resources

The cost to States for resources varies depending upon their individual requirements. Only Arkansas, Florida, Illinois and New Jersey reported relatively substantial costs (i.e., above about \$70,000).

REMARKS

This review of historical costs to the States for radiological emergency response plans and preparedness provides a guideline to the cost for a State to have a complete plan and preparedness. One way of evaluating this cost is to compare the States with NRC concurrence to those without. The States with low levels of cost, especially in the planning area, generally are those without concurrence. These include Illinois, Oregon, Tennessee and Wisconsin. On the basis of the costs, it would appear that Colorado should be close to concurrence, which is indeed the case. Arkansas received concurrence on May 3, 1979 after the study was completed. For Colorado, concurrence is projected for the near future.

It should be also noted that States without operating nuclear power stations incur costs of about the same amount as contiguous States with operating power stations. The two examples are Washington and Delaware, for Trojan and Salem respectively.

On the basis of historical estimates, a typical State might incur the following costs for NRC concurrence:

Plan

Initial	\$50,000
Update	\$ 5,000 per year

Preparedness

- Exercises \$10,000 per site
- Training
 - Initial \$10,000
 - Update \$ 2,000 per year
- Resources
 - Initial \$70,000
 - Update \$ 7,000 per year

These costs are further investigated in subsequent sections.

PLANS - FUTURE COSTS

Future costs for radiological emergency response plans were explored with the States before the accident at Three Mile Island and are summarized in Exhibit 3. These future costs represent a sampling of the thinking going on in the States at the time and provide a baseline for the reevaluation that is presently taking place in many States. Note that the future costs do not include the proposed Emergency Planning Zones (EPZs) because they are yet to be adopted by the U.S. Nuclear Regulatory Commission and Environmental Protection Agency as guidance. The anticipated cost impacts of the EPZs are treated separately in Chapter 5.

For most States that already completed their plans, large future costs are not envisioned even when additional nuclear power stations are incorporated. Basically, there is a certain amount of economy of scale. This means that the incremental costs for an additional nuclear power station becomes progressively smaller. If an additional unit is added to an already established site, the incremental costs are viewed to be smaller.

For States actively supporting local governments, the costs incurred for additional stations will increase substantially because of the costs for planning on the local level. On the other hand, incremental costs at the State level should be small.

Future planning costs for Illinois estimated to be over \$250,000 should be substantial for two reasons. First, Illinois is not starting from a plan that meets NRC concurrence and second, the plans must incorporate eight sites eventually.

PREPAREDNESS - FUTURE COSTS

The future costs to States for radiological emergency response preparedness in support of commercial nuclear power stations are summarized in Exhibit 4. As in the case of estimates

for plans, these costs represent the views of the States before the Three Mile Island accident. Variety of cost and requirements is evident in all three categories of preparedness - exercises, training and resources.

The annual cost for exercises could reach rather high amounts for States that expect to have a large number of facilities in the future, such as Alabama (\$24,000), California (\$67,500), Illinois (\$40,000), and New York (\$117,000). These costs are predicated on the assumption that the State participates fully in each local exercise. This level of involvement reflects current State thinking on the matter in some States. Because of the anticipated high level of costs, State planners are seeking ways to limit them without impairing the quality of the exercises.

Future costs for training are substantial in many States. Illinois sees the necessity to hire a full-time instructor with total annual costs estimated at \$55,000. Washington has also estimated a large outlay for training - \$34,000 initially with \$28,000 for periodic retraining. Both States expect to have many sites in the future, eventually eight sites in Illinois and five in Washington. Alabama, with eventual plans for four sites, does not give credit radiation training developed for wartime to the peacetime activities at nuclear power stations. In addition, some training is lumped into the exercise category. On an equivalent basis, Alabama's future costs might be expected to be almost as high as those reported by Washington and Illinois. States without additional sites should not experience much growth in their training costs after initial requirements are fulfilled. Only retraining costs should be incurred in, for example, Arkansas, Colorado, Connecticut, Delaware, Florida and New Jersey. Some States do not view themselves having future training programs. Such States include California, Florida, New York, Oregon, Tennessee and Wisconsin.

Future costs to States for resources depend to a great extent on how well equipped they are currently. States considered to be under equipped now are Connecticut, Delaware, Illinois, New York, Tennessee, Washington and Wisconsin. However, requirements may vary. Illinois has the highest requirements that are estimated at about \$107,000. A number of States with an increasing number of nuclear power stations becoming operational need additional personnel to help plan, conduct exercises, aid in training and man emergency resources.

States that consider themselves to be adequately equipped include Alabama, Arkansas, California, Colorado, Florida, New Jersey and Oregon. Nevertheless, Alabama, Florida and Oregon have pointed to specific areas that need improvement.

It is important to note that there is some economy of scale in resources. Once a State is fully equipped an additional site only adds a small increment to the cost. On the other hand, exercises and training do not follow economies of scale to the same extent. Each additional site requires another team of response personnel to be trained and another exercise to be performed. Although there is some transfer of knowledge within the State from one site to another, it appears to have only small impact.

THE FUTURE COST IMPACT OF THREE MILE ISLAND - CASE STUDIES: ILLINOIS AND NEW YORK

Although it is difficult to track the fast paced reevaluation going on in the States in the wake of Three Mile Island, two case studies are worthwhile citing as examples of the planning now envisioned - Illinois and New York. The future planning costs for Illinois, pre Three Mile Island, were estimated to be over \$250,000. Currently thinking is that these earlier statements are too small in view of the expanded planning criteria that are now being addressed. Future preparedness costs of \$40,000 for exercises, \$55,000 for training, and \$107,000 for resources are also viewed to be too small. The largest increase anticipated in view of Three Mile Island is for continuous on site and off site monitoring devices on each nuclear power station with telemetry and automatic alerting to the Springfield office of the Emergency Services and Disaster Agency. The estimated cost for the first unit at LaSalle is \$723,000. After the bugs are ironed out, the intention is to outfit the other nuclear power stations with similar monitoring devices. Cost estimates are not available for full deployment.

Recommendations for program revision for New York following the review of the Three Mile Island accident by the Bureau of Radiological Health, New York State Department of Health, working in conjunction with the Disaster Preparedness Programs, New York State Division of Military and Naval Affairs, include the following 15 items:

1. Acquisition and distribution of stable iodine and development of guidance for use of stable iodine by:
 - a. Emergency workers
 - b. Institutionalized individuals
 - c. General public
2. Develop and maintain survey reports for each nuclear power reactor site similar to the Environmental Survey Reports of April 1962 for Indian Point, August 1964 for the Brookhaven National Laboratory and September 1964 for Niagara Mohawk. Current survey reports would include information permitting the rapid assessment of potential vectors of exposure following an accidental release of radioactive material. Estimated cost is \$50,000 per site.
3. Evacuation analysis including the time frame and evacuation routes within 5, 10 and possibly 20 miles of nuclear power reactor sites for the general public and institutionalized individuals in hospitals, prisons, etc.
4. Provide for the following in evacuation planning:
 - a. Notification methods to activate patterns of evacuation.
 - b. Designation of reception centers.
 - c. Security for the evacuated areas.
5. Review procedures for providing information to the media and the general public:
 - a. Provide additional telephone lines plus staff assistance for round-the-clock coverage by the Health Department's Public Information Officer.

- b. Institute the Health Department's toll free hotline at an early time for public inquiry calls.
6. Develop procedures for collecting, reporting and evaluating monitoring and surveillance data. Provide for transition from precise, "low level" environmental surveillance to rapid, less sensitive techniques and procedures during the emergency phase.
7. Select the location of monitoring locations and sampling points around each nuclear power plant site. Recruit and provide training for CD monitors.
8. Provide funding for additional radiation emergency response kits. Upgrade present emergency kits and for mobile communications for radiological response teams.
9. Provide funding for training emergency personnel and conducting drills and exercises.
10. Develop a generic plan for research and training reactors and other facilities possessing "large" radiation sources.
11. Extend response planning activities within 20 miles of nuclear power reactor sites to include contiguous counties, States and Canada.
12. Provide site specific meteorological information and a real time basis at the EOC.
13. Promote uniform application of protective action guides by Federal agencies and all States.
14. Revise the response procedures for nuclear facility accidents at locations outside of New York State potentially impacting on this State (e.g., fresh vegetables produced in California or products produced in Wisconsin that may be contaminated from a nuclear facility accident.)
15. The following internal Health Department actions are also intended:
 - a. Provide definitive instructions for coordination and coverage of District EOC's by the Regional Health Directors.
 - b. Identify access points for information and materials from Health Systems Management.
 - c. Provide for the Public Health and Health Systems Management duty officers support to the Disaster Coordinator upon activation of the EOC.

No overall cost estimate for this revised program is currently available.

EXHIBIT 1. HISTORICAL COSTS TO STATES FOR RADIOLOGICAL EMERGENCY
PLANS IN SUPPORT OF COMMERCIAL NUCLEAR POWER STATIONS

Example 1. Alabama

PLAN (Browns Ferry and Farley)

Manpower		\$21,400
- Dept. of Public Health	\$15,400	
- Dept. of Civil Defense	2,500	
- Dept. of Pensions and Security	3,500	
Printing		<u>500</u>
		\$21,900

PLAN UPDATE (Browns Ferry, Farley, and Bellefonte)

Manpower		\$15,000
- Dept. of Public Health		
90 workdays @ \$100 per day	\$9,000	
- Other agencies		
60 workdays @ \$100 per day	6,000	
Travel		
- For three sites		<u>3,000</u>
Total:		\$18,000

Note: Total cost estimates should be viewed as somewhat low since all items are not included. Bellefonte is not included into the plan yet but some work has been completed to include it.

Example 2. Arkansas

PLAN (Arkansas)

Manpower (3 man-years)		\$42,000
- Dept. of Health		
- Other agencies		

PLAN UPDATE

Manpower		\$ 1,400
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Note: Total cost estimates should be viewed as approximately correct.

Example 3. California

PLAN (Humboldt Bay, Rancho Seco, and San Onofre)

Manpower		\$102,000
- Office of Emergency Services		
340 working days @ \$100 per day	\$34,000	
- Supporting agencies - Health, Transportation, Military, and Parks and Recreation		
680 workdays @ \$100 per day	\$68,000	

Travel
 Small item

Secretarial support - included in manpower

Printing and postage		<u>3,700</u>
Total:		\$105,700

EXHIBIT 1 (Continued)

PLAN UPDATE (Diablo Canyon, Humboldt Bay, Rancho Seco, and San Onofre)

Manpower		\$ 6,000
- Office of Emergency Services plus supporting agencies		
60 workdays @ \$100 per day		
Total:		\$ 6,000

Note: Total cost estimates should be viewed as approximately correct.

Example 4. Colorado

PLAN (Ft. St. Vrain)

Manpower		\$40,000
- All agencies		
2 man-years		
Printing and miscellaneous		2,500
Total:		\$42,500

PLAN UPDATE

Manpower		\$2,600
- All agencies		
Secretarial, printing and miscellaneous		2,500
Total:		\$ 5,100

Note: Includes local government costs.

Example 5. Connecticut

PLAN (Haddam Neck and Millstone)

Manpower		\$20,000
- All agencies		

Example 6. Delaware

PLAN (Salem-located in New Jersey)

Manpower		\$30,000
- All agencies		
1 man-year		

Example 7. Florida

PLAN (Crystal River, St. Lucie and Turkey Point)

Manpower		\$20,000
- Division of Disaster Preparedness		
120 workdays @ \$100 per day	\$12,000	
- Department of Health and Rehabilitative		
Services - Radiological Laboratory		
80 workdays @ \$100 per day	\$ 8,000	
Total:		\$20,000

Note: Total cost should be viewed as low because estimates for travel, secretarial support and printing were not available.

EXHIBIT 1 (Continued)

Example 8. Illinois

PLAN (Dresden, Quad Cities and Zion)

Manpower		\$13,000
- Dept. of Health		
6 man months @ \$100 per day		

Total:	less than	\$20,000
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Note: This estimate is somewhat low because input from other agencies is not considered. However, it is unlikely that the total would exceed \$20,000.

Example 9. New Jersey

PLAN (Oyster Creek and Salem)

Manpower		\$30,000
- All agencies		
1 man-year		

Example 10. New York

PLAN (FitzPatrick, Ginna, Indian Point, and Nine Mile Point)

Manpower		\$40,500
- Dept. of Health		
300 workdays (1970-1971) @ \$100 per day	\$30,000	
30 workdays per site for specific operating procedures		
@ \$115 per day for all three sites	10,500	

Travel		<u>4,500</u>
- For all sites - \$1500 per site		

Total:		\$45,000
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PLAN UPDATE

Manpower		\$ 4,000
- Dept. of Health		
40 workdays @ \$100 per day		

Total:		<u>\$ 4,000</u>
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Note: Other agency participation is not included in estimate of total. Also, some other items are not included. Total cost estimates should be viewed as somewhat low.

Example 11. Oregon

PLAN (Trojan)

Manpower		\$25,000
- Dept. of Health		
1 man-year		

PLAN UPDATE

Manpower		\$ 7,000
- Dept. of Health and other agencies		
70 workdays @ \$100 per day		

EXHIBIT 1 (Continued)

Example 12. Tennessee

PLAN (Sequoyah and Watts Bar)

Manpower	\$30,000
- Dept. of Health	
One year effort of two persons over a 10-year period.	
Total:	\$30,000

Note: Other agency contributions are not included. Nevertheless, the total represents a realistic estimate. Watts Bar has not been included into plan although work to include it has been completed.

Example 13. Washington

PLAN (Trojan and Washington Nuclear Plant 1, 2 and 4)

Dept. of Emergency Services (April 1975-1977)

Manpower	\$4,875
- 75 workdays (minimum) @ \$65 per day	
Travel	850
- 22 days per diem @ \$25 per day	
- 2,300 miles @ 13¢ per mile	
Secretarial support	2,000
- 50 days @ \$40 per day	
Printing	1,000
- Copies of plan, maps, etc.	
Miscellaneous	500
- Postage, telephone calls, etc.	
Training and education	400
Subtotal:	\$9,775

Dept. of Social and Health Services (for supporting document)

Manpower	\$4,900
Travel	500
Miscellaneous	
- Printing and telephone	100
Subtotal:	\$5,500

Other agencies

Manpower	\$1,650
Total: (State portion of Plan)	\$16,925

Note: The following costs for the local plan were borne by the State.

Cowlitz County Plan (for Trojan) (1974-77)

Manpower	\$6,500
- 100 workdays (minimum) @ \$65 per day	

EXHIBIT 1 (Continued)

Travel	3,300	
- 80 days per diem @ \$25 per day		
- 10,000 miles @ 13¢ per mile		
Secretarial support	3,000	
- 75 workdays @ \$40 per day		
Printing and miscellaneous	1,500	
Total:		\$14,300

Benton/Franklin County Plan (for WNP 1, 2 and 4) (April 1975-77)

Manpower		
- 65 workdays @ \$65 per day	\$4,225	
Travel	1,575	
- 35 days per diem @ \$25 per day		
- 5,400 miles @ 13¢ per mile		
Secretarial support	1,600	
- 40 days @ \$40 per day		
Printing		
- Copies of plans, maps, etc.		
Miscellaneous		
- Postage, telephone calls, etc.		
Total:		\$10,000
Total: (State portion of local plans)		\$24,300
Total: (State and local plans)		\$41,225

PLAN UPDATE

Department of Emergency Services	\$ 7,500
Radiation Control, Social and Health Services	2,800
Other State agencies	2,500
Two local plans	6,500
Total:	\$19,300

Example 14. Wisconsin

PLAN (La Crosse, Kewaunee, and Point Beach)

Manpower	\$20,000
- All agencies	
1 man-year	

EXHIBIT 2. HISTORICAL COSTS TO STATES FOR RADIOLOGICAL EMERGENCY
PREPAREDNESS IN SUPPORT OF COMMERCIAL NUCLEAR POWER STATIONS

Example 1. Alabama

EXERCISES

Manpower of all State agencies plus transportation - \$6,000 per site.

Total for 2 sites \$12,000

TRAINING

Briefings at exercises are considered part of training.

RESOURCES

No special dedicated resources were purchased.

Example 2. Arkansas

EXERCISES

Semiannual exercises \$ 4,600

TRAINING

Initial. State and local officials, Response Team Members.
(2.5 man-years) \$47,500

Update. 0.3 man-years. \$ 5,000

RESOURCES

Initial. Communications, vehicles, monitoring, dosimetry,
miscellaneous. \$115,000

Update. 10% replacement, excluding vehicles. \$10,000

Example 3. California

EXERCISES

For all agencies - 135 workdays per site - \$13,500.

Total for three sites. \$40,500

TRAINING

Initial. For Peacetime Radiological Instrument Training (PRIT)
and Radiological Defense Officer (RDO) courses 4 persons @
\$4,000 per person. On job training - \$2,000. \$18,000

Update. 10 workdays. \$ 1,000

RESOURCES

Dept. of Health has purchased response kits containing detectors,
decontamination equipment, etc. \$ 2,000

EXHIBIT 2 (Continued)

Example 4. Colorado

EXERCISES

Total personnel costs based on time spent during exercise. \$ 5,800

TRAINING

Initial. Meetings with all agencies named in plan comprised 8 days. Does not include radiological health training related to plan. \$ 1,000

Update. Emergency response team and department staff training = \$1,700. Radiological response training course = \$600. \$ 2,300

RESOURCES

Initial. Emergency instrumentation, protective clothing, respirators, decontamination equipment, emergency generators, air samplers and communications equipment for Dept. of Health. \$23,350

Update. Instrument calibration and repair costs. \$ 1,100

Example 5. Connecticut

EXERCISES

Manpower of all State agencies, transportation, plus per diem. \$25,000

TRAINING

Initial. 6 months.

RESOURCES

No special dedicated resources were purchased.

Example 6. Delaware

EXERCISES

Should be no greater than New Jersey experience for Salem. \$25,000

TRAINING

Initial. Only NRC supplied training.

RESOURCES

Initial. Installation for drop for National Warning System (NAWAS) from Salem nuclear power station to Delaware State Police - \$600. Two surplus vans - \$600. Associated equipment for survey instruments - Stabilized Assay Monitors (SAMs) - \$1,000. (Note: 2 SAMs \$3,300 each were provided by utility to State.) \$ 2,200

Update. NAWAS operating charge. \$ 300

EXHIBIT 2 (Continued)

Example 7. Florida

EXERCISES

Exercises take place at all three sites but no cost estimates are available.

TRAINING

State training takes place at all three sites but no cost estimates are available.

RESOURCES

Initial. Mobile Emergency Radiological Laboratory (MERL) (Note: Funding supplied by utilities.)	\$70,000
Update. Jelly analyzer to replace sodium iodide detector for MERL.	\$10,000

Example 8. Illinois

EXERCISES

Not available. Probably low cost because limited to communications.

TRAINING

1977. Twelve Illinois State persons for radiation health emergencies.	\$30,000
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RESOURCES

Initial. Mobile laboratory.	\$70,000
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Example 9. New Jersey

EXERCISES

Dept. of Environmental Protection - \$15,000 per drill inclusive of salaries and amortization of equipment, State Police plus Civil Defense - \$10,000	\$25,000
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TRAINING

Not available.

RESOURCES

Dept. of Environmental Protection - 3 Stabilized Assay Monitors (SAMs) @ \$6,000	
Civil Defense and Disaster Control - 3 base stations, 1 generator, 24 walkie talkies - \$50,000 (partial utility contribution.)	\$68,000

Example 10. New York

EXERCISES

During 1977, emergency simulations were conducted for two counties
(for two sites). Each training session/exercise required:

planning - 25 workdays	\$ 2,500
County/state participants - 100 workdays	\$ 7,900

EXHIBIT 2 (Continued)

Meals/lodging for participants \$ 2,500
 Total per site: \$12,900
 Note: These estimates do not include transportation and assistance provided by the nuclear facility staff.

Total: \$25,800

TRAINING

Initial. In 1958-1962, about 50 State and local officials received the U.S. Public Health Service Management of Radiation Accidents course. There was no tuition charge. Cost - 250 workdays - \$21,250.

1976 radiological response training course. No tuition charges. Cost - 20 students for 4 days - \$1,850.

Total: \$23,100

Note: These estimates do not include travel and per diem.

Update. Not available.

RESOURCES

Initial. Four dedicated emergency kits with survey instrumentation @ \$2,500. \$10,000

Update. Annual costs for emergency survey equipment/kits maintenance and calibration. \$ 600

Example 11. Oregon

EXERCISES

1975. Initial Trojan power station exercise. Preparation and conduct by Oregon Civil Preparedness Instrumentation Program personnel.

Manpower - 80 workdays for 4 persons	\$22,400
Travel - 500 miles x 4 persons x 15 days @ 13¢/mile	3,900
Per Diem - 4 persons 15 days @ \$25 per day	1,500
Publications, printing and miscellaneous	250
Subtotal:	<u>\$27,950</u>

Oregon/Washington/local costs \$ 7,000

Total: \$35,000

1977. Trojan power station exercise. Costs for exercise involvement for PGE (Trojan), Washington State agencies, Cowlitz County, Columbia County, Oregon State agencies and Federal agencies. \$10,000

Costs for exercise development and conduct involving PGE (Trojan), contract personnel, Federal/State/local agencies \$32,500

Manpower, travel, per diem extras. \$ 7,000

Total: \$49,500

Note: See Example 13. Washington.

TRAINING

Not available.

EXHIBIT 2 (Continued)

RESOURCES

Initial. Computer and related hardware for dose assessment
Projection. \$10,000

Update. Equipment and pagers. \$ 5,000

Example 12. Tennessee

EXERCISES

All State agencies. \$ 600

TRAINING

None to date.

RESOURCES

Not available.

Example 13. Washington

EXERCISES

See Example 11. Oregon for Trojan. No exercise yet for Benton/Franklin
Counties (WPPSS Unit 2)

TRAINING

Initial training of response personnel not provided by Federal
government. \$ 8,000

RESOURCES

None to date.

Example 14. Wisconsin

EXERCISES

Transportation and manpower costs for two persons for one day per
exercise.

TRAINING

Some familiarization training for fire, police and other local officials.

RESOURCES

None to date.

EXHIBIT 3. FUTURE COSTS TO STATES FOR RADIOLOGICAL EMERGENCY
PLANS IN SUPPORT OF COMMERCIAL NUCLEAR POWER STATIONS

Example 1. Alabama

Continued annual costs of approximately \$18,000 with current focus on completion of the Jackson County plan for Bellefonte. In addition, State support of the revision of the Limestone/Lawrence/Morgan Counties' plans for Browns Ferry and the Houston/Henry Counties' plans for Farley. In 1983, the annual costs should increase with the beginning of State support of the local effort for Lauderdale County plan for Yellow Creek, although sited in Mississippi.

Example 2. Arkansas

Continued annual costs of approximately \$1,400 for update of planning and review. No additional nuclear power stations are anticipated.

Example 3. California

Continued annual costs of approximately \$6,000 for maintenance of the plan and the inclusion of the San Luis Obispo County plan for Diablo Canyon into the State plan. Additional nuclear power stations, such as the one planned, Stanislaus, could be incorporated at little additional cost.

Example 4. Colorado

Continued annual costs of approximately \$5,100 for critique of exercise and plan revision. No additional nuclear power stations are anticipated.

Example 5. Connecticut

Annual costs would depend on the nature and amount of the changes to be made. This would include the changes to all facility plans. A rough estimate of this cost is \$2,000.

Example 6. Delaware

Continued annual costs at current level for maintenance of State plan. No estimate is available. State may need to support New Castle County for local planning effort related to Salem and Hope Creek (located on the same site in New Jersey). A plan for Summit would eventually have to be included if the project is ever resumed.

Example 7. Florida

Continued annual costs at current level. No estimate is available. No additional nuclear power stations are anticipated.

Example 8. Illinois

Illinois wants to update the existing State plan to achieve NRC concurrence. Estimated costs to do this are:

• One full time planner to write and update State operations plan	- \$26,000
• Secretary	- 11,000
• Additional costs (travel, printing, etc.)	- 13,000
Total:	<u>\$50,000</u>

These costs would be incurred annually for approximately the next five years until the plans are completed at all sites. The strategy for developing plans is to first do the new sites, La Salle, Byron and Braidwood. After these have been completed adequately, apply the experience onto the already established sites, Zion, Quad Cities and Dresden.

EXHIBIT 3 (Continued)

After the five year period, a lower level maintenance cost will be incurred. Clinton and Carroll must eventually be incorporated into the plan. Clinton is now under construction and Carroll is being planned.

Example 9. New Jersey

Continued annual costs at current level. No estimate is available. Additional power stations, such as Hope Creek and Forked River, could be incorporated at little additional cost.

Example 10. New York

Continued annual costs at current level of approximately \$4,000 for maintenance of the plan. As each new site is added, an estimated cost of \$3,000 is incurred for developing specific operating procedures. These costs will apply to Shoreham and Sterling which are under construction. Also, to New Haven and Jamesport which are in the planning stage.

Example 11. Oregon

Continued annual costs at current level of approximately \$7,000 for all agencies. When Pebble Springs is approved, annual costs should begin to increase. Increases are currently forecast for 1986 and would have to include a full-time planner plus additional transportation allowance because of the considerable distance. Cost would exceed \$12,000 per year beyond current level.

Example 12. Tennessee

Annual costs should increase slowly as additional nuclear power stations are added. This would include completion of the Watts Bar and the Hartsville and Phipps Bend nuclear power stations as they approach the operating stage. Also, there will have to be some work on the Hardin County plan for the Yellow Creek nuclear power station located nearby in Mississippi. Clinch River will have to be included if it is ever approved.

Example 13. Washington

For the near term, annual costs are anticipated to continue at about the current level of \$19,000 per year. The Benton/Franklin Counties plan will eventually have to be modified to include the WPSS 1 & 4 units in addition to the WPSS 2 that is scheduled to become operational in 1981. Also, WPSS 3 and 5 (Satsop) will require plans for Grays Harbor/Mason/Pacific Counties. Finally, Skagit 1 and 2, which is in the planning stage now, will require a plan for Skagit County. In conclusion, planning costs should continually increase substantially under the assumption that the State continues to do the bulk of the local planning.

Example 14. Wisconsin

Annual costs should increase especially if Wisconsin wants NRC concurrence. No estimate available. Costs should increase somewhat with the inclusion of the Tyrone and Haven nuclear power stations.

EXHIBIT 4. FUTURE COSTS TO STATES FOR RADIOLOGICAL EMERGENCY RESPONSE
PREPAREDNESS IN SUPPORT OF COMMERCIAL NUCLEAR POWER STATIONS

Example 1. Alabama

EXERCISES

Continued annual costs of \$12,000 per year for two sites. When the plan for Bellefonte is exercised, an additional cost of \$6,000 will be incurred. In about six years when Yellow Creek becomes operational, another \$6,000 will be added. Annual costs should then remain constant at \$24,000 per year.

TRAINING

The planning philosophy of the State is to keep emergency personnel doing what they are usually doing anyway, e.g., the police enforce the law. Therefore, the State does no special training beyond the briefings at the exercises. Perhaps a portion of the costs assigned to exercises should be considered training. Radiation monitoring courses for wartime organized by the State could also be given credit for peacetime at nuclear power stations. There is no consensus on this matter.

RESOURCES

Current equipment is adequate. However, a mobile laboratory would facilitate deployment. The current practice is to load equipment into State vehicles for response. There is an inadequate number of monitors in the State. Estimates are less than 200. A larger number may be needed for monitoring evacuees if contamination is considered in the planning. Two people should be added to the staffs of the Department of Health and Civil Defense because of the increased load in planning and preparedness not only with regard to nuclear power stations but transportation of radioactive materials and radiography.

Example 2. Arkansas

EXERCISES

Continued annual costs of approximately \$4,600 are expected for the near future.

TRAINING

Continued annual costs of about \$5,000 to update emergency personnel is expected.

RESOURCES

Continued annual costs of \$10,000 for replacement of equipment is expected. Assuming that the converted X-ray van that is used for a mobile radiological lab needs replacement within the next five to ten years, a lump sum will be needed of perhaps \$20,000.

Example 3. California

EXERCISES

Continued annual costs of about \$40,500 is expected for the three existing sites. An additional \$13,500 will be needed for Diablo Canyon. If the planned Stanislaus station goes forward, the annual exercising cost will rise to approximately \$67,500 per year assuming that the State plan is fully exercised each time there is an exercise related to a particular nuclear power station.

TRAINING

Continued annual costs of about \$1,000. Since the Office of Emergency Services does not have a large turnover in personnel, re-training would require a minimum of time and funds; perhaps no more than one person per year.

EXHIBIT 4 (Continued)

RESOURCES

Principal reliance for equipment is on other agencies and sources. However, an inventory of resources is not currently available. If more stations than are presently foreseen go on line, a need would develop to have a full-time coordinator and staff. This is because there would be another plan to review, conduct exercises, etc.

Example 4. Colorado

EXERCISES

Continued annual costs of about \$5,800. No additional nuclear power stations are currently planned.

TRAINING

Continued annual costs of about \$2,300.

RESOURCES

Continued annual costs of about \$1,000.

Example 5. Connecticut

EXERCISES

Continued annual costs of about \$25,000 would be incurred for full exercises, such as the one at Millstone. Haddam Neck would incur similar costs. No other sites are planned.

TRAINING

No detailed estimates. Apparently \$8,750 would be sufficient for the first year and \$4,500 for subsequent years.

RESOURCES

Equipment is needed for three teams to measure both the forward and lateral spread of radiation and the necessary equipment to detect and communicate data to an emergency operating center. Communications equipment needed:

3 mobile radios	\$5,400
6 walkie-talkies	4,800
antennas and installation	400
Total:	\$10,600

This is a minimum requirement.

Miscellaneous equipment including closed-circuit air pack, air samplers, decon equipment = \$3,800.

Example 6. Delaware

EXERCISES

Continued annual costs of about \$25,000 to exercise Salem.

TRAINING

Some training on monitoring.

RESOURCES

Capability to measure gross alpha and beta needed. Estimated cost \$20,000. Gamma scanning would be desirable. Estimated cost \$40,000. This equipment would allow the State to have a fast response. Current capability is very limited.

EXHIBIT 4 (Continued)

Example 7. Florida

EXERCISES

Continued annual cost for all three sites. No additional sites are planned.

TRAINING

Continued annual costs for all three sites.

RESOURCES

Need a better system for notifying off duty personnel than the currently used call ahead system. Low level radiation instruments are needed. Additional personnel needed. Currently, the State has only four people that could evaluate a reactor accident. Additional upgrading of the Mobile Emergency Radiological Laboratory is warranted. No cost estimates available.

Example 8. Illinois

EXERCISES

Illinois wants to conduct exercises at the level of about \$5,000 per site. This would involve a few people in addition to one day of planning. With the three existing sites, annual costs will be about \$15,000. Since there will be eventually 8 sites, the cost will rise to about \$40,000 per year.

TRAINING

Illinois wants one full-time instructor to train local organizations. Cost is \$22,000 per year. Annual training costs will be about \$33,000.

RESOURCES

The following types of equipment are wanted by Illinois:

Radiological equipment	
• Local (for decontamination, personnel monitoring, etc.) \$5,000 per site x 7 sites	\$35,000
• State Emergency Services and Disaster Agency	15,000
Dept. of Health-primarily for ingestion pathway control	30,000
Subtotal:	\$80,000
Protective equipment	
• Respirators	\$ 4,000
• Anti-C clothing, miscellaneous	3,000
Subtotal:	\$ 7,000
Communications equipment	
• Walkie-Talkies	\$20,000
Total:	\$107,000

Example 9. New Jersey

EXERCISES

Continued annual costs of about \$25,000 for large scale exercises at Salem. This cost may decrease as interest in the large scale exercise decreases. This has been the case for Oyster Creek.

EXHIBIT 4 (Continued)

TRAINING

Information not available.

RESOURCES

Current resources judged to be adequate.

Example 10. New York

EXERCISES

Continued annual costs of about \$13,000 per site. There are currently three sites. Two additional sites are under construction and four more are in the planning stage. Assuming a cost of \$13,000 per site, exercise costs would eventually run to \$117,000 per year.

TRAINING

No estimate available.

RESOURCES

Three additional emergency kits plus upgraded equipment for current kits. Cost is approximately \$21,000.

Example 11. Oregon

EXERCISES

Continued annual cost at current level is anticipated. Exercise costs for Pebble Springs will present greater cost because of the distance factor.

This will occur in about 1984-86.

TRAINING

Not available.

RESOURCES

New pager system is needed for Department of Health. Also, \$50,000 to \$100,000 for a superior dose assessment mini-computer would be desirable. This would replace the current one which is valued at about \$10,000.

Example 12. Tennessee

EXERCISES

Continued annual costs borne by State is expected to grow with the number sites. Currently there is one-Sequoyah. Eventually, there will be four additional sites. The Clinch River, if constructed, will probably present still more cost.

TRAINING

Information not available.

RESOURCES

Walkie-talkies with repeaters for Department of Health. For two teams with three persons per team, total cost is \$15,000. Another person, at least part time, is needed for emergency activities.

EXHIBIT 4 (Continued)

Example 13. Washington

EXERCISES

Continued annual costs for Trojan. Additional costs will be incurred soon as WPSS 2 becomes operational by 1980. Thereafter, WPSS 3 & 5 at Satsop will require exercises that will incur additional costs. Further into the future, Skagit and Pebble Springs (Oregon) will require exercises.

TRAINING

Estimated costs for initial training of response personnel beyond what has been incurred to date - \$34,000. Annual periodic retraining of personnel is estimated to be about \$28,000.

RESOURCES

Estimated costs for Department of Social and Health Services-Radiation Control:

• 4 Portable high volume air sampler with flow control	\$2,400
• 2 self-contained breathing apparatus	2,600
• 2 portable alpha survey meter with air proportional probe	900
• Miscellaneous	<u>3,100</u>
Subtotal	\$9,000

Communications capability for either in Department of Social and Health Services or Department of Emergency Services

• 7 transceivers and 1 base station	\$2,000
Total:	\$11,000

Annual equipment repair or replacement \$2,000

Example 14. Wisconsin

EXERCISES

Annual costs should continue about the same level. Costs will increase with Tyrone and Haven becoming operational but this is some time to come. Tyrone is under construction now. Haven is still in the planning stage.

TRAINING

Continuation of familiarization seminars dealing with transportation and nuclear power stations. This is part of DOT Safe Streets program. Cost is \$80,000 for all seminars.

RESOURCES

Division of Health requirements.

Low level survey meters \$3,000. Additional equipment needed includes portable air monitors and spectrometer. Two additional staff members are needed to adequately do work.

CHAPTER 3. COSTS TO LOCAL GOVERNMENTS

The inquiry into costs to local governments for radiological emergency response plans and preparedness in support of commercial nuclear power stations consisted primarily of visits to and/or discussions with a number of local officials. This was supplemented by a review of Office of State Programs' files. Much of the information gathered could be described as judgmental. Very few local officials have kept good records of manpower expended in preparing plans and time involved in exercises and training. If large items were bought for emergency resources, a hard cost could be obtained from the purchase receipt. Local officials' estimates were compared with those of State officials where possible. Overall, the estimates should be viewed as best guesses. Note that the information contained in this chapter is based on data gathered before the accident at Three Mile Island.

The inquiry considers cost to local governments for two types of sites. The first type of site has an operating nuclear power station. There are historical costs to report for this type of site. In some cases, there is an adjacent unit under construction on the same site nearby an operating unit. For these sites, the incremental costs will be explored. The second type of site has a nuclear power station under construction. The full range of costs related to plans and preparedness has not yet been experienced. Therefore, there may be more future costs involved.

All sites are classified on the basis of either one-State planning or two-State planning. The reason for this classification is that a considerable number of sites require two-State planning which in turn demands extra coordination and cooperation that may lead to added costs.

COSTS TO LOCAL GOVERNMENTS IN SUPPORT OF OPERATING NUCLEAR POWER STATIONS: ONE-STATE PLANNING

The costs to local governments for radiological emergency response plans and preparedness in support of operating nuclear power stations for sites involving only one State are summarized in Exhibit 5.

For the 14 examples reviewed, all have plans - some simple and others elaborate. The costs for putting the plan together result from the manpower required for liaison meetings, analysis, writing, and reviewing. Many government entities may be involved that require input and review. The highest estimate is for the Tri-county plan for Browns Ferry, Alabama - \$50,000. More typically, a local plan costs about \$10,000 when only one jurisdiction is involved. The Tri-county plan for Browns Ferry is so high because three jurisdictions have to do planning.

Lacey Township, within Ocean County, believes that it needs a more detailed plan - one that goes beyond the one supplied by New Jersey and Ocean County. The estimated cost for this plan is \$55,410.

There is no rule of thumb for determining the cost of plan maintenance with respect to initial cost. Nonetheless, 10 percent of initial cost seems to be a reasonable estimate based on reported costs.

For the 14 examples reviewed in Exhibit 5, all governments conducted either table-top or full-scale exercises except for:

- Twelve Towns (Haddam Neck), Connecticut;
- Westchester, Rockland, and Putnam Counties (Indian Point 2 and 3), New York; and
- Manitowoc County (Point Beach 1 and 2), Wisconsin.

The governments responsible for these three sites expect to conduct exercises in the future. Costs for full-scale exercises run higher than table-top exercises. Some examples of full-scale exercises are Humboldt County (Humboldt Bay), \$21,000; Tri-Town (Millstone 1 and 2), \$10,000; and Tri-County (Browns Ferry 1, 2 and 3), \$6,500. Costs for table-top exercises are lower. Typically, they cost only a few thousand dollars.

Costs to local governments for training depends to a great extent on the needs and resources of the local governments. Sometimes the State does all the training, especially when it has assumed all responsibility in the radiological area. Many times, training is considered an integral part of the exercises.

No local government has incurred any substantive cost for resources that is directly attributable to the nuclear power station. Sometimes, local governments have purchased, or are purchasing, items such as communications equipment, using the necessity for response to an accident at the nuclear power station as an additional reason for justification. This appears to be the case for Tri-County (Browns Ferry), Tri-Town (Millstone 1 and 2), Citrus County (Crystal River 3), and Westchester County (Indian Point 2 and 3).

Most governments have indicated a desire to purchase resources in three basic areas: improved communications, improved warning, and improved radiological monitoring. Twelve Towns (Haddam Neck) do not know what they really need and would like NRC to make the necessary assessment. Many believe that good communications systems are the most cost-effective.

A number of local governments depend to a great extent on mutual aid agreements to get what is needed from other local counties or municipalities, from the Federal Government, and from private industry. Mutual aid agreements in California and northern Alabama are notable examples.

The problems associated with plan writing and maintenance, training, exercising and over-seeing equipment purchasing and maintenance have become so burdensome, in the view of a number of local governments, that a full-time person is needed to fulfill local government responsibilities with regard to this activity. Specifically, Tri-Town (Millstone 1 and 2), Oswego County (FitzPatrick and Nine Mile Point 1) and Westchester County (Indian Point 2 and 3) indicate such a need.

The incremental costs required of local governments for additional nuclear power station units that are constructed on existing sites appear to be small. Small modifications in the plan, some additional exercise costs, and additional costs for communications from the additional unit to the emergency operations center may be the only costs local governments may have to incur. Overall, there appears to be great economy of scale in this regard.

COSTS TO LOCAL GOVERNMENTS IN SUPPORT OF OPERATING NUCLEAR POWER STATIONS: TWO-STATE PLANNING

The costs to local governments for radiological emergency response plans and preparedness in support of operating nuclear power stations for sites involving two-State planning are summarized in Exhibit 6.

For the five sites reviewed, all of the impacted jurisdictions appear to have some kind of plan. The costs to local government for planning vary considerably depending on the degree of State involvement. For example, where State participation is great, such as in Columbia and Cowlitz Counties (Trojan), local government costs for the plans are small (\$4,000). Comprehensive plans for Houston, Henry and Early Counties (Farley) have costs in excess of \$20,000. For this case, local officials appear to have played a more active role. The sample is too small to make accurate general cost estimates. However, manpower cost is the primary cost component.

Some cost estimates for more comprehensive plans than currently exist give additional insight into the cost issue. Comprehensive plans for Lake County including Zion and Waukegan (Zion) are estimated to cost about \$20,000 to \$30,000. For New Castle County including Port Penn (Salem), a cost estimate as high as \$63,000 was reported, but this estimate would include other factors as well, such as costs for an oil refinery, oil pipelines and LNG tankers.

Overall, the earlier cost estimate of \$10,000 per impacted jurisdiction would seem to hold for giving a rule of thumb for the cost of planning. An impacted jurisdiction could be a city or town in addition to a county. So Lake County, Zion and Waukegan estimates to \$30,000 using the rule of thumb.

For the five sites reviewed, most of the impacted jurisdictions have conducted either table-top or fuller scale exercises. Notable exceptions of very limited participation include:

- Early County (Farley 1), Georgia,
- Kenosha County (Zion 1 and 2), Wisconsin, and
- New Castle County (Salem 1), Delaware.

The interesting fact regarding these three counties is that they are not located in the States where a nuclear power station is sited.

The sample for the cost of exercises is too small to generalize. Nevertheless, based on the information at hand, if all the impacted jurisdictions were to conduct rather full-scale exercises, \$10,000 appears to be a reasonable cost. Manpower is the primary cost factor. Lake County, with its greater population and more complex plans, would incur considerably higher costs for exercises.

Costs to local governments for training, whether one or two States are involved, are minimal because training appears to be primarily a State responsibility or is limited to what local government does in connection with civil defense radiological training.

Only Lower Alloways Creek and Port Penn (Salem 1) have incurred substantive costs for resources: over \$5,000 for radios, telephones and posters for the case of Lower Alloways Creek; and \$2,000 for a pole and installation of a siren for the case of Port Penn.

Nevertheless, almost all impacted jurisdictions, except for Lower Alloways Creek (Salem 1), Kenosha County (Zion) and Houston, Henry and Early Counties (Farley 1), believe they lack adequate resources. As in the case of sites involving one-State planning, needed resources include improved communications, improved warning, improved radiological monitoring, improved educational programs and additional paid support personnel.

The initial cost estimate for the above items applied to the Zion area total at least \$106,000. This may represent a higher cost than other areas because of the relatively high population surrounding the Zion nuclear power station as well as the relatively lower level of plans and preparedness in relation to the population at risk.

Contiguous States have various memoranda of understanding and mutual aid agreements that help contiguous counties across State boundaries to plan and to be assured of more adequate resources than a single county has at its disposal. Costs and benefits in this area in terms of dollars have not yet been identified.

The Salem station represents the epitome in terms of economy of scale for costs for plans and preparedness. Salem 2 and Hope Creek 1 and 2 are all under construction. Eventually, there will be four operating nuclear units on one site. The incremental costs to local governments for the three additional units should be small: minor modifications in the plan, some additional exercise costs, and some additional communications costs for the emergency operations center. The major costs for planning, communications, warning and radiological monitoring should have all been incurred with the operation of Salem 1. On the basis of economy of scale and the fact that the risk is four times greater compared to only

one unit operating, more complete and comprehensive plans and preparedness at the local government level appear to be justifiable.

COSTS TO LOCAL GOVERNMENTS IN SUPPORT OF NUCLEAR POWER STATIONS THAT ARE UNDER CONSTRUCTION

The costs to local governments for radiological emergency response plans and preparedness in support of nuclear power stations that are under construction are summarized in Exhibit 7. For the five sites reviewed, all of the impacted jurisdictions have completed or are in the process of developing plans. Costs to local governments for planning seem to vary considerably. Jackson County (Bellefonte 1 and 2) and San Luis Obispo County (Diablo Canyon 1 and 2) report \$20,000 and \$22,400 respectively for plans involving a larger number of government officials compared to Chattanooga-Hamilton County (Sequoyah 1 and 2) and Rhea County (Watts Bar 1 and 2) which appear to have put forth a smaller planning effort. The Benton and Franklin Counties plan (WNP 1, 2 and 4) relied mostly on State help. The local costs amounted to several thousand dollars.

The planners for Rhea and Meigs Counties face rather unique problems since the infrastructure for these counties is not adequately developed. How these problems will be resolved may set a precedent as more nuclear power stations are constructed in very sparsely populated areas.

Good cost estimates for exercises are not available since in this sample the exercises have been of a pre-operational nature or have not yet taken place. The exercise cost of \$5,000 for San Luis Obispo County (Diablo Canyon 1 and 2) is consistent with the costs reported by other counties in Exhibits 5 and 6 for exercises of the same scale. Manpower is the main constituent.

San Luis Obispo County is exceptional in the amount of local money spent in training - \$18,000. In fact, this county has spent the most of the 24 examples reviewed in this study. In general, California counties incur most of the costs for local training whereas, in most cases, the States take primary responsibility for training.

Generally speaking, local governments have spent very little for emergency resources. San Luis Obispo County is an exception because their planners viewed a strong radiation measuring capability as important and incurred costs totalling \$9,200 for ion chamber, air samplers and field response kits.

Jackson County identified a need for communication capabilities at \$22,000, and Benton and Franklin Counties identified a need for a plektron warning system at \$750. Rhea and Meigs Counties admit that they are almost totally unequipped. Rhea County identified deficiencies in communications and warning whereas Meigs desires a total law enforcement, emergency operations, communications and highway system amounting to \$595,000 initially. Annual costs would recur at \$183,000. The primary reason stated for this relatively high level of resources is the undeveloped infrastructure.

Benton and Franklin Counties have mutual aid agreements and memoranda of understanding so that planning can be conducted in a coordinated fashion. In contrast, Rhea and Meigs Counties do not have such an arrangement. Based on the beneficial experience of others, it appears that these counties could have more effective and efficient plans and preparedness, and therefore less costly, if they were to adopt the mutual aid approach.

There is economy of scale in plans and preparedness in all multi-unit sites. The economy is especially evident for the case of Benton and Franklin Counties. Not only are there three nuclear power stations under construction, but there are also a number of other fixed facilities on the Hanford Works as well.

EXHIBIT 5. COSTS TO LOCAL GOVERNMENT FOR RADIOLOGICAL EMERGENCY RESPONSE PLANS
AND PREPAREDNESS IN SUPPORT OF OPERATING NUCLEAR POWER STATIONS

Sites with One-State Planning

Example 1. Browns Ferry 1, 2 and 3 - Alabama - Morgan, Lawrence and Limestone Counties

PLANS

All impacted counties have plans. Overall estimate for the Tri-county plans is \$50,000. This is based on twice the Morgan County plan of approximately \$26,000. Manpower requirements were 13 persons over a 7-month period, Oct. 71 through April 72. This accounted for the bulk of the expense. Travel was estimated at \$700 and briefings \$500. The primary Emergency Operating Center is located in Morgan County.

EXERCISES

Estimated total cost, \$6,500, for full scale exercise of February 28, 1976 that involved 185 officials. Four were from the State. Sixty-one vehicles were used. The exercise lasted for about 6 hours. Assuming an average cost of \$5 per person per hour and \$10 per vehicle, costs come to \$6,500. About 10,000 leaflets were printed explaining to citizens the purpose of the exercise. Cost at 2¢ each was \$200. Telephone calls and miscellaneous costs were \$100. Related exercises include in 1978 a tornado/plane crash and in 1977 a tornado. Many of the same government officials were involved in these exercises. No cost estimates available.

TRAINING

No direct costs. Considered to be a part of exercising.

RESOURCES

The Emergency Operation Center was built in Decatur, Morgan County, in 1975 at a cost of over \$200,000 with resources worth over \$500,000. Roughly one-half was paid by the city of Decatur and Morgan County. The construction of the EOC is only indirectly attributable to Browns Ferry. Some warning systems funded by local government include a three radio station override for emergency announcements and a TV interrupt. Initial cost to local government was \$7,500. Maintenance cost estimated at \$48 per year.

Improvement in warning to local residents, about 1500 families within a 7-mile radius of Browns Ferry, is needed between the hours of 10 PM and 6 AM when radio and TV are not on the air. For that time frame, current reliance is on warning using door-to-door procedures. This method takes about two hours according to experience from the 1976 exercise. Discussion of using the NOAA storm alert system is in progress.

There are no local radiological instruments other than Civil Defense meters and dosimeters. The county desires some capability in this area.

The Tri-Counties are part of a 13-county mutual aid agreement of northern Alabama. A computerized catalog of resources is maintained for use in mutual support in the event of an emergency. Jackson County, where Bellefonte is located, and Lauderdale County, across the river from Yellow Creek in Mississippi, both participate in the same mutual aid agreement and could be used to support the Tri-Counties.

Example 2. Humboldt Bay - California - Humboldt County

PLANS

Overall estimate for Humboldt plan is \$13,000. Based on manpower requirements of 5 workdays for the local coordinator, 90 workdays for analysts and 10 workdays for clerical and administrative. Humboldt is the only impacted jurisdiction. Plan maintenance estimated to cost \$1,000 annually. Based on 10 workdays.

EXHIBIT 5 (Continued)

EXERCISES

Estimated cost for June 30, 1977 full scale exercise - \$21,200. Based on 190 workdays @ \$100 per workday. Included about two months of Humboldt Office of Emergency Services in developing the scenario. Other participants included the sheriff and police. Printing and distribution costs considered to be minor. Generally, there is only a desk top exercise once or twice per year. This requires about 6 workdays. Every year there is one full scale exercise to drill the whole emergency organization. In 1978, a plane crash exercise was conducted. Other types under study are for floods, high winds, and chlorine spill. The Humboldt Bay nuclear power station exercise will not be conducted again until after it becomes operational again. It is currently shut down because of seismic difficulties.

TRAINING

Initial training of 20 people @ \$600 each amounted to \$12,000. Additional on-job training cost \$1,000 for 40 workdays. Annual retraining estimated as \$4,000 for 40 workdays.

RESOURCES

No cost to date. More reliable monitoring instruments and better communications with deployed monitors are needed. Reliance is on mutual aid from State and Federal agencies in the areas of health physics, assessment of dairy products and pasture land and in any required decontamination.

Example 3. Rancho Seco 1 - California - Sacramento County

PLANS

Cost of Sacramento County plan - \$6,400. Based on 20 workdays for local coordinator and 30 workdays for analysts. Annual plan maintenance costs - \$2,100 for 20 workdays. Planning costs for Rancho Seco 2, which is in the planning stage, are not viewed as significant.

Multi-county actions and mutual aid if needed are coordinated by the State under the California Master Mutual Aid Agreement.

EXERCISES

Cost of exercises on an annual basis - \$2,100. Based on 20 workdays. Exercises have been conducted at a rate greater than once per year. About five or six to date.

TRAINING

Cost of on-job training - \$1,050. Annual retraining cost - \$1,050. There are enough trained monitors and radiological defense officers.

RESOURCES

No costs to date. Overall response capabilities are adequate for an accident that affects only the low population zone of 5 miles radius in which 350 persons reside. The rest is pasturage. Capabilities to deal with larger events are difficult to evaluate. Major problem is inadequate accident base on which to base plans and exercises. Therefore, it is difficult to select appropriate protective action measures - particularly in early stages of a major accident. This problem could potentially be alleviated if ARAC services were made available. These are under development with Lawrence Livermore Labs. (Note: Discussed in a later section.)

EXHIBIT 5 (Continued)

Example 4. San Onofre 1 - California - Orange and San Diego Counties

PLANS

Major impacted jurisdictions are Orange and San Diego Counties and Camp Pendleton. Initial plan cost to Orange County - \$6,200. Based on 50 workdays for local coordinator and 15 workdays for analysts. Annual plan maintenance - \$450. Based on 5 workdays per year. These estimates should be judged as low.

Initial plan cost to San Diego County - \$12,000. Plan maintenance - \$800 annually. Camp Pendleton costs are not included. However, there is a plan.

Total plan costs - \$18,200. Plan maintenance - \$1,250 annually.

Additional planning costs for San Onofre 2&3 are not viewed as significant.

EXERCISES

Orange County - \$3,000. Based on 42 workdays.

San Diego County - \$1,500.

Any possibility of conducting other than Command Post exercises have been eliminated because of financial constraints.

TRAINING

Orange County. Formal training of two persons @ \$1,300 each - \$2,600. Training maintenance - 5 workdays per year.

San Diego County. Formal training - \$8,000. Training maintenance - \$500.

Orange County conducts formal radiological monitor training, monthly. To date 400 radiological monitors from hospitals, fire, police, school and industrial organizations have been trained and certified. Retraining is incorporated into the exercise schedule.

San Diego County training program ceased in May 1976 because of reduction of staff. Additional staff is required to resume training.

RESOURCES

No costs have been incurred by either Orange or San Diego Counties. Resources are based on mutual aid requests. For Orange County, the 26 cities in the county, as well as those of numerous outside agencies, county, State and Federal, are included as resources for the county.

Example 5. Haddam Neck (Connecticut Yankee) - Connecticut - Twelve Towns

PLANS

Cost of plan borne by State with a heavy subsidy by Northeast Utilities. Planning requires organization of 11 towns and one city. There are no counties in Connecticut. In general, civil preparedness in the area is considered to be weak. Towns do not have the interest to develop basic emergency preparedness. Apathy is claimed to be the reason. Also, the good operating record of Haddam Neck seems to be important.

EXERCISES

Existing plans have not been exercised.

TRAINING

Towns have not taken advantage of training offered by the State or NRC.

EXHIBIT 5 (Continued)

RESOURCES

Towns have not purchased any equipment. There is a general lack of understanding of what is needed. Towns want NRC to make necessary assessment of equipment requirements.

Example 6. Millstone 1 and 2 - Connecticut - Tri-Town

PLANS

Tri-Town plan exists for three impacted jurisdictions, Waterford, New London and East Lyme. Northeast Utilities put in a 9-month effort to assemble plan paying many costs amounting to \$8,000. There is heavy reliance on Northeast Utilities for technical advice concerning recommendation for evacuation. No independent capability exists. Additional cost for planning for Millstone 3 not judged to be significant.

EXERCISES

Full scale multiple exercise was conducted on June 15, 1978. Simultaneous exercise of the radiological emergency for Millstone, hurricane, train wreck, and hospital plans.

About 420 people were involved including 150 firemen, 120 town employees and 250 volunteer civilians who acted as evacuees. Cost of food for persons evacuated estimated at \$600 and paid for by State. Overall cost is not estimated by Tri-Town. However, based on comparison with other governments that have had large scale exercises, costs could be approximately \$10,000.

TRAINING

Thirty-nine people were trained for decontamination in connection with exercise. Tri-Town wants to train radiation monitoring teams. Would like NRC to come through on promises for training.

RESOURCES

Because telephone communications are inadequate, Tri-Town decided to purchase a General Electric communications system worth \$28,000. Northeast Utilities will supply the antenna. Tri-Town is lacking in emergency equipment, such as survey instruments, charcoal masks, etc. There is no good Emergency Operations Center. Would like to have Federal funding, \$1.2 million, for one in the local high school. Evacuation signs are needed. Waterford has a part time civil preparedness director. There is a need for a full time person.

Example 7. Crystal River 3 - Florida - Citrus and Levy Counties

PLANS

Impacted jurisdictions are Citrus and Levy Counties. Both have plans that are related by mutual aid agreements. Total cost - \$2,000. Based on reported cost of \$1,000 for Citrus County. Annual updating cost - \$1,000. Based on reported cost of Citrus County. Overall, Citrus County, where Crystal River is located, carries the main burden.

EXERCISES

Citrus County annual costs - \$500. This includes leaflets and public relations with residents near Crystal River nuclear power station.

TRAINING

Initial radiological training expected for Citrus County - \$2,000. Training for response personnel for response team that would also be used for transportation accidents - expected costs \$20,000. (Some may be paid for by NRC.) Expected annual retraining - \$2,000.

EXHIBIT 5 (Continued)

RESOURCES

Expected Citrus County radiological instrumentation	\$5,000
Expected initial costs: communications	1,000
van	6,000 (already purchased)
protective gear, clothing, misc.	1,000
Total:	<u>\$13,000</u>

Annual updating estimated at \$1,400 for radiological instrumentation. To be used for transportation accidents also.

Warning viewed as inadequate. A siren system within the low population zone may be needed. Primary reliance is on the State Mobile Emergency Radiological Laboratory (MERL) for radiological surveillance and monitoring functions. Because of concern for the long time of 2-1/2 hours for the MERL to reach Crystal River vicinity from Orlando, even though it is in constant radio communication with Citrus County EOC, locals want some independent capability.

Example 8. St. Lucie 1 - Florida - St. Lucie and Martin Counties

PLANS

Impacted jurisdiction are St. Lucie and Martin Counties. Both have plans that are related by mutual aid agreements. No cost estimates reported but effort judged at roughly \$3,000. St. Lucie, where the nuclear power station is located, carries the main burden. No significant cost to incorporate St. Lucie 2 when it becomes operational.

EXERCISES

Cost estimated at \$3,000. About 20 persons involved, mostly deputies, local Division of Disaster Preparedness personnel, and a few volunteers.

TRAINING

No costs incurred. Training done by State.

RESOURCES

No costs incurred by counties. Direct phone line installed from St. Lucie nuclear power station to St. Lucie Emergency Operations Center by Florida Power and Light as backup for NAWAS that is used for initial notification. Martin County has radio actuated sirens. St. Lucie does not. Some local citizen groups would like supplemental sirens along Indian River to enhance warning by radio, TV and police mobile PA systems.

Because of very limited local radiological surveillance and monitoring capability, the counties are mainly dependent on the Mobile Emergency Radiological Laboratory to fulfill this function, which takes about two hours to arrive on the scene. Local view is that this is adequate.

Example 9. Turkey Point 3 and 4 - Florida - Dade County

PLANS

Rough estimate of cost - \$3,000. Primary component is manpower for meetings, coordination, etc. Printing costs were paid by Florida Power and Light.

EXERCISES

No cost estimate available. Many people are involved in exercises which are performed annually.

EXHIBIT 5 (Continued)

TRAINING

No costs incurred. Manpower in support of State.

RESOURCES

The one coded siren in the vicinity of Turkey Point reaches only about 30% of the affected population. Police cars with PA systems are used to supplement the siren. Also, helicopters may be used. Because houses are closed and air conditioned, these sound warning systems are not effective. There is no current technology now available that is better than the current system. Perhaps the NOAA storm alert system would be useful. NRC should provide technical expertise to improve this situation.

Civil defense instruments are of limited value. Local authorities are dependent on the utility and Dade County Health Department until the MERL arrives from Orlando. This takes about 6 hours. MERL makes dose assessments and recommends action by radio while on route. More local response is desirable in this area.

Example 10. Oyster Creek - New Jersey - Ocean County

PLANS

General procedures for local level outlined in State plan. More detailed planning still in development stage. Work has been going on over a 3-year period on a time available basis. No cost estimates available. Evacuation route signing and identification of nonambulatory people is still needed. No significant additional cost to incorporate Forked River, which is under construction, into plan because it is adjacent to Oyster Creek.

Lacey Township, where Oyster Creek and Forked River are located, would like detailed planning that includes preparing a map delineating evacuation routes, compiling a roster of non-ambulatory persons that would need transportation; preparing printed information for distribution to the public explaining the evacuation plan; posting highway markers delineating evacuation routes; and reducing above data to usable form for police, civil defense and disaster control personnel. This plan would require the cooperation of 12 adjacent municipalities. Cost estimate - \$55,410.

EXERCISES

Exercises are conducted. No estimate available of costs to local government.

TRAINING

None being carried out.

RESOURCES

No costs incurred to date. Good communications system is needed, especially for other types of disasters, such as hurricanes and forest fires. Any system should be able to communicate with five hospitals in area and shelters for people. Cost estimate - \$20,000.

Example 11. FitzPatrick and Nine Mile Point 1 - New York - Oswego County

PLANS

Local plan development took a period of 2 years. Coordinated by director of Oswego County Office of Emergency Preparedness/Civil Defense. Involved a number of drafts and incorporated local and State government review. Nine Mile Point 2, which is under construction, is a part of the plan.

EXHIBIT 5 (Continued)

EXERCISES

Cost of June 1977 table top exercise - approximately \$13,000 as noted in Example 10 of Exhibit 2 for New York. Includes cost of manpower for both county and State officials but not transportation. Another exercise in which everything is simulated is being planned for the future.

TRAINING

One person for 2-week course in Radeff - cost \$700. Could use a person to do some training.

RESOURCES

NAWAS drop installed at initial cost of \$300. Maintenance cost is \$160 per year. Current communications system is very limited. Need microwave link to fire, law enforcement, highway, etc. Estimated cost - \$20,000. County may have to pay only 50%. Because State response time is so slow, 3-4 hours, need a full time radiological staff. Current volunteers with radiation experience are not adequately qualified. County is completely dependent on the utility until the State arrives. Estimated salary for this person - \$18,000. Mutual aid appears to be limited to New York State fire.

Example 12. Indian Point 2 and 3 - New York - Westchester, Rockland, and Putnam Counties

PLANS

Indian Point 2&3 are located in Westchester County. Indian Point 1 is not currently in operation and is unlikely to resume operation. Impacted jurisdictions are Westchester, Rockland and, to a lesser extent, Putnam Counties. Westchester County has a plan. Both Rockland and Putnam are depending primarily on general disaster plans. Rockland is developing a specific plan. Putnam has only some special procedures. There is no plan for the village of Peekskill. The low population zone is 1100 meters radius. There are 33 families and businesses in the impact area which has a radius of about 1 mile. For this area, detailed plans are available. Planning to a lesser extent is carried out to 5 miles. As many as 35,000 people may become involved, depending on the nature of the accident and the direction the wind is blowing. No estimate is available for the cost of the Westchester County plan. Local officials believe current plan is seriously out of date. Updating cost estimated at \$10,000. Greater participation of local government is needed.

EXERCISES

Exercises to date have been limited to testing of communications. First simulation type of exercise comparable to the one conducted in Oswego County is being planned for April 1979. State estimate of total cost - approximately \$13,000 excluding transportation. County estimate of its own cost - \$5,000.

TRAINING

Some training of firemen by Westchester County.

RESOURCES

Westchester County purchased fully equipped communications van 2 years ago for alternate seat of government. Total cost - \$31,000. Van - \$16,000 and communications - \$15,000. Can have radio contact with fire, police, sheriff. Lacks radio with emergency medical service. Existence of Indian Point was a selling point to budget officials. Radiation equipment is limited to civil defense type. A ball park, modest estimate for equipment needs is initially \$50,000, and annual maintenance cost of \$25,000. This would include protective equipment for firemen in addition to radiation monitoring apparatus. Brochures are needed for public information purposes. Estimated cost - \$1,200 for 40,000 copies. Full time person is needed for coordination of all activities related to Indian Point because staff of Westchester County Office of Disaster and Emergency Services has been reduced from 18 persons to four during the last 3 years.

EXHIBIT 5 (Continued)

Example 13. Kewaunee - Wisconsin - Kewaunee County

PLANS

Local plan exists. Limited to map showing residences to be contacted, positions for road blocks; and to a call out list. Utility helped put plan together. No cost estimate available. Evacuation of residents within one-quarter mile radius from nuclear power station is carried out by unpaid volunteers who are organized into teams. This is done on a door-to-door basis.

EXERCISES

Exercises were conducted twice per year initially until reasonably perfected. Now, exercises are conducted once per year. Main objective is to notify all residences within 30 minutes after activation of teams.

TRAINING

No training or costs incurred other than related to exercises.

RESOURCES

No cost incurred. Local government relies on utility and State for radiological monitoring capability.

Example 14. Point Beach 1 and 2 - Wisconsin - Manitowoc County

PLANS

No cost estimate available. Plan should be updated every two years.

EXERCISES

No exercises have been held because of past view of local emergency government. Because of change in local government and the search for a new director of emergency government, exercises will be held in the future.

TRAINING

None.

RESOURCES

No costs incurred.

EXHIBIT 6. COSTS TO LOCAL GOVERNMENTS FOR RADIOLOGICAL EMERGENCY RESPONSE PLANS
AND PREPAREDNESS IN SUPPORT OF OPERATING NUCLEAR POWER STATIONS

Sites With Two-State Planning

Example 1. Farley 1 - Alabama/Houston and Henry Counties and Georgia/Early County

PLANS

Houston and Henry Counties. Farley 1 and Farley 2 (under construction) are located in Houston County. Both units are covered in the plans for the two counties. Manpower required: Effort of 25 workdays for person in jeep to make estimate of impacted population which is 5,405 people within a 7-mile radius. The survey was also used for tornado warning purposes. Public meetings held by Civil Defense, sometimes in conjunction with other objectives. Writing, editing, etc., took 80 workdays. Overall local effort estimated to be 265 workdays. Main effort was by Houston County. Henry County Effort was smaller since it is impacted to a lesser degree. Overall cost estimated at \$20,000 based on a workday of \$70 for 1973. Houston and Henry Counties work together without the benefit of memos of understanding or mutual aid.

Early County. Draft plan is in force which details the warning evacuation, sheltering, and human aid for the some 600 people within the 7-mile impact radius. No cost estimate available for preparation of the plan. The local plan is supported by the Georgia plan. Early County plan will be finalized after Georgia receives NRC concurrence.

EXERCISES

Manpower costs for Civil Defense, Sheriff, Pensions and Security, National Guard, etc., are incurred in four stages. Orientation/preliminary planning meeting--40 to 50 people for one day--50 workdays. Planning meeting--10 people for one-half day--5 workdays. Exercise--10 people one day--10 workdays. Critique meeting--10 people for one-half day--5 workdays. Total: 70 workdays @ \$100 per workday--\$7,000. \$100 per day includes salary, fuel, and incidental costs. Publication costs are incidental. Exercises are conducted annually. Costs are incurred primarily by Houston County, although Henry County participated to a limited extent. Early County has observed exercises of the Houston/Henry Counties. No exercise of its plan has been conducted to date because Early County is waiting for NRC concurrence of Georgia plan.

TRAINING

Any training by Houston and Henry Counties is included as part of exercises. Training in Early County is limited to practice runs by rescue team. Radiological monitoring courses related to war conducted at the local level is also considered training for the nuclear power station.

RESOURCES

No costs were incurred by any of the three counties. No need for local government to have any special equipment beyond the civil defense equipment that is available.

Example 2. Quad Cities 1 and 2 - Illinois/Whiteside and Rock Island
Counties and Iowa/Clinton and Scott Counties

PLANS

Quad Cities 1 and 2 are located in Whiteside County. Other impacted counties are Rock Island, Clinton and Scott because of their close proximity. The evacuation plan dated January 1976, has a 5-mile radius in Illinois and a 3-mile radius in Iowa. Impacted population is roughly 2,500. Plan was joint effort of Emergency Services and Disaster Agency/Civil Defense, police, Red Cross and the utility, Commonwealth Edison. Plan has been updated on a continual basis. No cost estimate is available.

EXHIBIT 6 (Continued)

EXERCISES

Exercising of plan has been limited to testing of communications and some table top exercises. No cost estimate is available.

TRAINING

Limited training related to use of civil defense shelter and monitoring kits.

RESOURCES

Warning systems limited to use of police PA systems. Public means of warning such as radio, TV and sirens would supplement existing system. Full time coordinator needed for updating planning. For example, in 1978 there were 25 changes in personnel and telephone numbers alone. All counties are dependent on volunteers to a great extent. Instrumentation for emergency workers is needed.

Example 3. Zion 1 and 2 - Illinois/Lake County and Wisconsin/Kenosha County

PLANS

Zion 1 and 2 are located in Lake County. There are approximately 50,000 people within a 5-mile radius of the nuclear power station. About 25,000 live in the City of Zion. The City of Zion Police Department put together a plan at a cost of \$1,000. The plan is not viewed as being complete, especially with regard to detail in evacuation. Waukegan, which is situated south of Zion, also has a plan. Winthrop Harbor, to the north of Zion, does not have a plan. Any response would be handled rather through the Lake County general disaster response plan. Lake County itself does not have a particular plan for the nuclear power station. Kenosha County, Wisconsin is located about 3 miles north of the nuclear power station. It has a plan to (1) either host the evacuees from Zion, and/or (2) to evacuate and shelter the people within Kenosha County that may be affected. The effort for the Kenosha County plan was about two workdays. Special features for all plans that need additional planning attention include ways of evacuating large populations at recreational areas, improving the warning system, and coordinating jurisdictions. Estimated cost for a comprehensive Lake County and Zion Emergency Plan--\$20,000 to \$30,000.

EXERCISES

First exercise conducted in 1978. Limited to testing of notification and communications. Zion Police Department was the lead agency. No cost estimate available. Cost estimate for an exercise that would involve 100 police and 100 firemen in addition to vehicles--\$25,000. Could be implemented during a tornado alert.

TRAINING

Kenosha County plan not exercised. No costs incurred by local government for training that is relevant to nuclear power station. There is a need to train police, fire and paramedical personnel. Special provisions are needed to limit looting during an evacuation.

RESOURCES

The following apply mainly to the City of Zion. Communications system needs upgrading by locating in basement of emergency operations center instead of top floor of police building because of close proximity to power station--2 miles. Estimated cost--\$20,000. New Motorola System--\$30,000. Current warning system consists of one siren located on top of Municipal Building of Zion City Hall. Many areas are not covered, especially when the wind blows in certain directions. Effectiveness is limited in winter because of the blanket effect of snow. Four additional sirens @ \$4,000 each estimated to cost \$16,000. Currently, all radio and TV stations have to be called individually for warning announcements. Desirable to prepare radio and TV tapes in advance. No cost estimate available for this. Radio alerters and block wardens suggested to supplement warning by sirens, radio, TV and police PA systems. No cost estimate available for these. Evacuation signs required--150 signs for \$5,000.

EXHIBIT 6 (Continued)

Educational pamphlet for residents in area explaining procedures and updating. Estimated cost for one printing and mailing--\$3,000 for 5,000 copies. One full time planner is needed to write and implement plan. Cost--\$22,000 per year. Secretarial support staff--\$10,000 per year. Total initial cost estimate--at least \$106,000. Kenosha County appears to be adequately equipped in terms of plans, warning, and communications.

Example 4. Salem 1 - New Jersey/Salem County and Delaware/New Castle County

PLANS

Salem 1 is located in Lower Alloways Creek Township, Salem County. The low population zone of 5 miles has a 1980 population forecast of about 4,700 persons. More than half of this population is in New Castle County, Delaware. Salem County, Lower Alloways Creek, Elsinboro, and Cumberland County all have contingency plans that are annexes to the New Jersey Plan. In addition, Lower Alloways Creek, which carries the main burden at the local level, has a special police directive for nuclear emergency incidents. No cost estimates are available for the preparation of these plans.

New Castle County planning is limited to the emergency operations plan that applies to any kind of emergency. Port Penn, which is the community that would be most heavily impacted, has an evacuation plan under development by Delaware. Currently, Port Penn and New Castle County are relying on State support from nearby Delaware City and Wilmington. Estimated cost for a New Castle County plan that would include Port Penn is about \$63,000.

No significant cost increases are envisioned for including Salem 2 and Hope Creek 1 and 2, all under construction, into the plans.

EXERCISES

Full scale and table top exercises have been conducted in Salem County. No estimate of local costs. Table top and limited field exercises have been conducted in New Castle County. Local involvement was small. No estimate available for local costs.

TRAINING

No costs incurred. Primary reliance on State for any training for both Salem and New Castle Counties.

RESOURCES

Lower Alloways Creek Township incurred costs for 4 portable radios--\$4,000, 17 telephones, 2,100 posters for \$550 and survey of township. Communications, warning, and overall preparedness are generally considered as adequate.

Port Penn. Volunteer Fire Department paid \$1,920 to install siren that was supplied by Delaware. Perceived needs are evacuation system, warning system to supplement existing siren, census survey of entire area in order to identify impacted persons, educational program, direct phone connection to New Castle County Call Board from Salem nuclear power station, prominently located radiation monitoring device, and portable equipment for volunteer firemen. To implement this, a County Public Safety advisor knowledgeable in this area is required. No estimate of cost is available for implementation.

Example 5. Trojan - Oregon/Columbia County and Washington/Cowlitz County

PLANS

Trojan is located in Columbia County. The low population zone with a radius of 2½ miles is about one-half in Columbia County and one-half in Cowlitz County. Warning sectors extend out to 2½ miles in both counties. There are almost 8,000 people within a radius of 5 miles from Trojan. Estimated cost of Columbia County plan about \$15,000 (\$3,000 contributed by Portland General Electric). Estimated cost of Cowlitz County plan--\$14,300 of which about 10 percent came from local sources with the remainder from Washington State. See Exhibit 1, Example 13. No estimates are available for updating.

EXHIBIT 6 (Continued)

EXERCISES

1975 exercise--\$7,000 for Washington, Oregon and local governments.

1977 exercise--roughly \$5,000 for local governments. See Exhibit 2, Example 11.

TRAINING

No costs incurred other than civil defense training at local level.

RESOURCES

Columbia County. Need \$36,000 for radio, communications systems including pagers. Half-time secretary needed to assist emergency services director. Cowlitz County. Sirens needed to improve warning system. Pagers and radios needed for Emergency Services personnel.

EXHIBIT 7. COSTS TO LOCAL GOVERNMENTS FOR RADIOLOGICAL EMERGENCY
RESPONSE PLANS AND PREPAREDNESS IN SUPPORT OF NUCLEAR
POWER STATIONS THAT ARE UNDER CONSTRUCTION

Example 1. Bellefonte 1 and 2 - Alabama - Jackson County

PLANS

Overall cost of plan from April 1978 to January 1979 estimated at about \$20,000 to the county and cities. Effort involved 14 people over this period. Also included in the cost was \$600 for briefings, \$1,050 for travel, and \$600 for printing. The plan extends out 5 miles and includes 5,000 people. Plan should be completed by March 1980.

EXERCISES

No exercises conducted to date since fuel loading is not scheduled until March 1981 for Unit 1. Cost estimates assumed to be approximately similar to those of Houston and Henry Counties (Farley) - \$7,000.

TRAINING

Limited to civil defense monitoring capability.

RESOURCES

No costs for resources incurred to date. Current communications capability is limited to telephone. Need radio communications for sheriff's radio net and highway patrol--estimated cost of \$22,000. Improved warning needed, such as plektron system for schools and industry. No estimate available. Jackson County is a member of the 13 county mutual aid agreement of northern Alabama and therefore could count on support from the Tri-counties (Browns Ferry 1, 2 and 3) and Lauderdale County (Yellow Creek). See Exhibit 5, Example 1.

Example 2. Diablo Canyon 1 and 2 - California - San Luis Obispo County

PLANS

Initial cost--\$22,400. Based on Manpower--144 workdays for local coordinator and 80 workdays for analysts @ \$100 per workday.
Update cost--\$1,000 per year. Based on manpower of 10 workdays @ 100 per workday. Fuel loading for Unit 1 is estimated for June 1979 at the earliest.

EXERCISES

Cost--\$5,000 for preoperational exercise. Based on 50 workdays for a few people for scenario writing and the staff time of various government officials.

TRAINING

Formal training of four persons in environmental health @ \$4,000 each--\$16,000. On-the-job training--\$2,000 for 20 workdays. Maintenance--\$1,000 for 10 workdays per year.

RESOURCES

Equipment--total cost \$9,200. 3 ion chambers for counting @ \$4,200, air samplers @ \$4,000, and 2 field response kits @ \$1,000.

Example 3. Sequoyah 1 and 2 - Tennessee - Chattanooga - Hamilton County

PLANS

The plan extends out to three miles from the nuclear power station. Impacted population in 1980 is estimated at about 3,310 in 945 families. No overall cost estimate is available. Mailing of questionnaires to specifically identify the needs of families within the 3-mile radius cost \$500. Analysis conducted by county computer processing center. Sequoyah 1 is forecast to have fuel loaded in 1979.

EXHIBIT 7 (Continued)

EXERCISES

Manpower estimate for exercises--120 manhours. Forty government people for 3 hours at emergency operations center. Volunteer effort--180 manhours--60 people for 3 hours.

TRAINING

None. All radiation monitoring is being conducted by Tennessee. Any indirect training is accomplished during the exercises.

RESOURCES

None incurred to date. Two ambulances needed to evacuate non-ambulatory persons.

Example 4. Watts Bar 1 and 2 - Tennessee - Rhea and Meigs Counties

PLANS

Impacted counties are Rhea and Meigs. Watts Bar 1 and 2 are located in Rhea County. The impacted resident population within a 5-mile radius of the nuclear power station is less than 2,000 persons. In addition, there is a substantial recreational population that would be impacted because of the recreational amenities surrounding Watts Bar Dam. Fuel loading for Watts Bar 1 is forecast for December 1979 at the earliest. To date, only Rhea County has formulated a plan. This was completed over an 8-week period by the volunteer civil defense director working during the evenings. A local bank permitted the plan to be duplicated for free on its mimeograph machine. Meigs County has not formulated a plan. It is currently working with the utility, the Tennessee Valley Authority, to develop a plan. However, there is not yet agreement on the level of resources that are necessary to develop the plan. Meigs County has a part time civil defense director. Rhea and Meigs Counties are not linked by mutual aid agreements.

EXERCISES

Exercise program has not yet been developed.

TRAINING

Training program has not been developed.

RESOURCES

Although Rhea County has approved a plan which is similar to the Chattanooga-Hamilton County Plan, it feels that at the current time it lacks adequate resources to implement the plan. This lack is in the area of communications, warning, and radiological instrumentation if needed. Of special concern is the warning and communications capability. No cost estimate is available. Rhea County is looking to TVA to determine these needs on a joint basis with the county. Meigs County has tentatively submitted its resource needs to TVA. Because of its undeveloped infrastructure, it has proposed a system that includes components of law enforcement (\$80,000), emergency operation (\$46,000), communications (\$45,000), and highway (\$2,500). The total initial cost is \$595,000. Annual costs are estimated at about \$183,000. It is currently unclear how TVA will respond to these requests.

Example 5. WNP 1, 2 and 4 - Washington - Benton and Franklin Counties

PLANS

WNP 1, 2 and 4 are located on the Hanford Works of the U.S. Department of Energy. Impacted counties are both Benton and Franklin. WNP 2, the first unit to become operational, is forecast to have fuel loading in March 1980 at the earliest. The others are forecast to have fuel loaded in June 1982 (Unit 1) and December 1982 (Unit 4). The cost of the Benton/Franklin Counties plan is estimated at \$10,000. The local cost portion could be as high as several thousand dollars, mainly in manpower. See Exhibit 1, Example 13. The plan also includes other fixed facilities on the Hanford Works. About 1,500 people reside within the 6-mile low population zone. Another 2,000 people are transient agricultural workers.

EXHIBIT 7 (Continued)

EXERCISES

The first exercise will be conducted in 1979. No forecast cost estimate is available. Volunteers are difficult to get because not too many people believe this is a worthwhile activity.

TRAINING

No local training is conducted. Reliance is placed on volunteers from the Hanford Works.

RESOURCES

No costs incurred to date. Needed equipment includes dosimeters for emergency workers and Plektron radio system for warning estimated at \$750. Benton County director does planning for both Benton and Franklin Counties without secretarial support. One half-time person would help with the increasing work load. Heavy reliance is placed on the mutual aid agreements with the U.S. Department of Energy Hanford Works and the utility--Washington Public Power Supply System.

CHAPTER 4. SOME IMPORTANT CONSIDERATIONS THAT AFFECT COSTS

There are a number of important considerations affecting costs at both the State and local government levels that merit discussion so that future costs these governments may incur may be better understood. The following discussion describes the cost situation for plans and preparedness at both the State and local government levels. Some additional overriding considerations that affect both levels of government are discussed. Finally, a model is developed of the costs for States and local governments that gives an estimate of the costs on a nationwide basis.

PLANS - STATES

The amount of manpower is the most important consideration in the cost of planning. In general, this cost is the product of the number of workdays involved in the planning effort and the cost per workday. The larger the scope of government involvement, namely, the more agencies involved, the greater the costs. Typically, agencies involved include civil defense/emergency services, radiation health division, environmental protection, highway patrol, public works, human welfare and agriculture. The time spent at meetings, writing drafts, and review can consume a considerable number of workdays. If a State chooses to write a local plan, the number of workdays can be expected to be increased considerably. A typical cost per workday for States is \$100, which includes salary and overhead.

Additional manpower planning costs are incurred annually with updating efforts. Costs may be larger when significant issues, such as Emergency Planning Zones (EPZs), the new protective action guides (PAGs) or thyroid blocking agents like potassium iodide, might be incorporated into the plans. Routine planning updates should not constitute large costs. On the other hand, a number of State personnel thought that the entire State plan would require a major review and overhaul every five to ten years because of important policy changes and government reorganization at the Federal, State and local levels. Finally, manpower costs involved in planning may be considerably affected by the use of consultants and the degree to which the utilities help out the State.

Some State and local government officials have commented that these government manpower costs should not be viewed as real costs but rather as costs of doing government business - planning for one of the many risks to society. Others believe that the manpower costs are real, especially when the planning burden may require the hiring of an additional staff member.

Training costs associated with the planning function can be important for some States that may find it helpful to have more trained personnel. To a great extent, NRC-organized emergency planning courses decrease the costs that States would have had to incur. These courses, which are conducted at DCPA Staff College, Battle Creek, Michigan, and in the field, provide the following for the students:

- Information and training required to lead and to coordinate the development of State and local radiological emergency response plans;
- Techniques for evaluating their own radiological emergency response plan (if they have one) or one that is provided; and
- Basics of nuclear reactor technology, postulated releases from reactor accidents, detection of releases, biological consequences, protective action guides, fixed nuclear facility planning needs, the planning process and planning concepts, essential elements of a radiological emergency response plan, tests and exercises, and workshops.

Generally speaking, State and local emergency personnel believe that the planning course broadens their perspectives considerably and is considered to be an important part in plan preparation.

The one-week tuition-free NRC-organized course was presented 12 times between 1975 and 1978 and is now given as needed or requested by State and local government personnel. The need for a course could result from turnover of personnel or the construction of new nuclear power stations in a region.

State and local government participation in the courses from 1975 through 1978 is shown in Exhibit 8. Two hundred State and 179 local government officials participated. All States having nuclear power stations in operation, under construction, or in planning also have participated. Nevertheless, on the basis of the inquiry local government emergency personnel could benefit considerably from the planning course. States not yet receiving NRC concurrence could benefit in most instances.

The latest planning course offered was in Jackson, Mississippi, conducted in cooperation with the Mississippi State Board of Health, Division of Radiological Health and the Mississippi Civil Defense Council, March 19-23, 1979. Twenty-two State and local officials participated from Mississippi, 3 from Louisiana and 1 local official from Florida. The next course is scheduled for Illinois in September 1979.

Costs incurred by NRC for travel and per diem reimbursement of State and local government participation amounted to \$91,000 for the period 1975-1978. The average cost per student for travel and per diem is approximately \$220. The range is from \$140 to \$400 depending on the location of the course and travel distance. The costs to State governments would be limited to salaries paid during the one-week course.

There is an attempt in some States to pass the information acquired in these courses to other State and local emergency workers by means of State organized training sessions. The extent to which this is practiced has not been ascertained.

Travel from the State capital to the local governments may constitute another large portion of the costs of planning. For large States with many sites, the travel costs could become considerable. Also, the occasional costs associated with travel to national and regional meetings should also be included.

Secretarial support for typing draft and final plans and related documents adds up to another item of some importance.

Printing, postage and telephone calls may accumulate to a sizeable amount. Several States reported printing costs of almost \$1,000. Florida reported mailing costs in excess of \$500 for sending out copies of the Florida plan to other States and to interested parties who made requests. The large volume of requests occurred because the Florida plan is viewed to be one of the better plans that received NRC concurrence.

There must be a cost associated with the extra planning needed to achieve NRC concurrence and the work involved with the regional interagency advisory committees. No estimated cost is available for this.

Also, State governments work with citizen groups which help to improve planning by lending their particular perspective and expertise. Sometimes the extra coordination needed adds to the cost of the final product. The benefits in many cases may be worth the additional cost.

Taking all these considerations into account, an initial cost of \$50,000 for the State plan and \$5,000 for an annual update appear to be reasonable for a typical State. As the historical costs illustrated in Chapter 2, wide variation can be expected from one State to another.

PLANS - LOCAL GOVERNMENTS

As in the case of States, manpower is the most important factor in the cost of local planning. The larger the scope of involvement, the greater the cost. In general, the lead agency is civil defense. Other agency involvement includes police, fire, health and a number of volunteer organizations. The time spent at meetings, writing drafts, and review can consume a considerable number of workdays. It is difficult to estimate a good dollar cost per workday. Some local civil defense officials have chosen to write the plan themselves and circulate the draft around by mail for comment, and then incorporate the comments into a final plan. Although this lowers the cost for the plan, representatives of the various impacted agencies do not have the opportunity to interact with each other and may have less of a sense of participation and communication. By using this procedure, the quality of the plan cannot help but suffer. Some of these deficiencies may be removed by subsequent exercises and updating.

Heavy State involvement in writing local plans may reduce costs to local governments. Likewise, a substantial amount of utility assistance tends to reduce costs incurred. In addition, the experience in writing other types of plans, such as for transportation-related accidents, may help to reduce costs.

Local governments have incurred little training cost for planning because of the NRC-organized courses. Some 179 local government emergency personnel have taken advantage of the courses

offered between 1975 and 1978 at an average cost of \$220 per student. Although travel and per diem costs were reimbursed by NRC and tuition was free, local governments still had to pay salaries. A summary by State is shown in Exhibit 8. There are a number of local government emergency personnel who could still benefit from the course even though their community already has a plan. It would be especially helpful in achieving NRC concurrence.

Other important cost items include use of consultants, travel, secretarial support, printing, postage and telephone calls.

Maps have been singled out as an item of substantial cost, however, sometimes they are supplied by the utilities. The cost of surveys can reach into the thousand dollar range.

Overflight photographs of the site as an aid to planning can be another costly effort. Some available sources are NRC, the State, the utility and the U.S. Geological Survey. The most useful photographs, in terms of planning, should be those that the Office of Inspection and Enforcement, NRC, is having completed under contract with EG&G. Of special interest is a 40 inch by 40 inch color photograph taken by Haselblad cameras at an elevation of 23,000 feet showing the nuclear power station and the surrounding area. This photograph represents distances 8 by 8 miles. An automobile can easily be distinguished. One photograph and one negative per site is available at no cost to the State or the adjacent State where the nuclear power station is near the border. Local governments can obtain copies from the State for use in emergency planning. The State and local governments must work out their own cost sharing arrangements. Since the photos are to be taken on a periodic basis, they should be helpful in updating impacted communities, delineating evacuation routes and the like.

Some local officials believe that additional costs will be incurred if local plans are to be reviewed to achieve NRC concurrence in the same way that States receive concurrence.

Public information and information relating to active citizen groups are two additional items of cost that are highlighted by some local officials. Three different approaches to public information are illustrated by Exhibits 9, 10 and 11. This information is important because it is what the public sees in advance of any actual emergency. Exhibit 9 shows a poster that gives planning and preparedness information for citizen response in the event of a nuclear accident for the nearby Salem nuclear power station located in Lower Alloways Creek Township, Salem County, New Jersey. The Township printed 2,100 for \$550 for a unit cost of 26 cents. The poster exhibits black printing on a green pastel paper measuring 8½ inches by 14 inches. (The exhibit is reduced in size.) Additional features include a hole in the poster for mounting near a telephone or other prominent place in a residence, or public building, and a gummed back with protective paper that is peeled so that it can easily be placed in the front of the citizen's household. The project was a joint project of the Civil Defense of Lower Alloways Creek and the State of New Jersey. Exhibit 10 illustrates public information that was distributed during the course of an exercise to the citizens of Morgan County, Alabama, nearby the Browns Ferry nuclear power station. The residents of Limestone and Lawrence Counties received similar leaflets. About 10,000 leaflets

were printed at a total cost of \$200, or 2 cents each. This project was completed by the Alabama Civil Defense Department. Exhibit 11 shows an approach used by the towns of East Lyme and Waterford, and the City of New London, Connecticut, for the Millstone nuclear power station. The emergency information poster was printed in the local newspapers which is usually a public service.

One important cost-saving feature used by a small number of counties is interlocal cooperation. This can take the form of an informal agreement or a formal memorandum of understanding. In this way, when more than one jurisdiction is involved, one person can do the organization and other related work for all of them. This procedure can eliminate much unnecessary duplication. Many States have laws that permit this type of cooperation (Ref. 5).

Based on these considerations, in addition to the historical review of Chapter 3, the cost of local plans for a typical jurisdiction is estimated to be \$10,000. More elaborate planning may come to \$20,000 per jurisdiction. For example, a nuclear power station that impacts three counties may require a plan that costs \$30,000 to \$60,000. Another example is two contiguous jurisdictions in two contiguous States. For this example, the total cost for the local plans is \$20,000 to \$40,000.

Although historical costs are sparse, it would appear that annual updating of the local plans should not exceed 10 percent or \$1,000 to \$2,000 per jurisdiction, and would be related to exercises. Major changes in local government may require correspondingly larger changes in the plan with attendant costs every five years or so.

PREPAREDNESS

Exercises

The costs of exercises involve both State and local governments. There is consensus on the essential value of exercises but not on the scope. The main area of contention is whether or not the public should be involved. Another important consideration is cost. The costs increase with the scope of the exercises. Those that are limited to testing communications are the least expensive. Table-top and full-scale exercises are correspondingly more costly. The final cost will depend on the number of persons involved, travel, and the amount of time spent in preparing, carrying out and critiquing the exercise. If vehicles and emergency equipment are used, their depreciation should be factored into exercise costs. Typical costs for a full-scale exercise based on historical costs may be as much as \$25,000 each for both State and local governments. This would include the cost to run the vehicles used and their depreciation.

Because of the large cost to local governments, in addition to political considerations, full-scale exercises are seldomly planned - more reliance is focussed on the table-top exercise, which has a cost limited probably to several thousand dollars. Some local governments have adopted a policy of rotating full-scale exercises. The logic for rotation is that most of the same emergency personnel are used to respond to any of the disasters envisioned; e.g., tornado, flood, fire, plane wreck, transportation spill, or nuclear power

station accident. There is also economy in volunteer participation, such as Red Cross, Mennonite Disaster Service, and the Civil Air Patrol. Low-cost communications and table top exercises are still done on an annual basis except in the year when the full-scale exercise is conducted. This method of cost spreading appears to be a reasonable cost-benefit compromise.

Training

There are two other core emergency response courses organized by NRC that State and local government people consider very worthwhile:

- Technical Operations Management Course for Radiological Emergency Response Coordinators and Staff, and
- Radiological Emergency Response Operations Course.

The objective of the Technical Management Course (Exhibit 12) is to prepare students to solve problems and to make decisions on protective response that would be the responsibility of the State or local emergency coordinator. Offered in many regions of the country, the one-week course concentrates on the plume exposure pathway. (An additional two-day course that highlights the food ingestion pathway is under development.) Tuition is free and NRC reimburses State and local officials for travel and per diem.

The total cost for travel and per diem for the five courses conducted in 1976 and 1977 was \$26,000, with an average expenditure of \$296 per student. Although 95 State personnel have participated to date, conversations with a number of State people indicate that still more can be done in this area. Especially highlighted was the delay of the Federal government in organizing the food ingestion pathway course in conjunction with the one-week plume pathway course. The next Technical Management Courses will be held in New England the week of October 29, 1979 and in Florida the week of December 3, 1979.

Participation at the local government level has been especially light, with only 10 persons participating through 1978. No course is currently scheduled for 1979. A few local coordinators, who do not want to rely heavily on the utilities or the State for judgment in this area, have expressed keen interest in developing the kind of capability offered by this course. For most States, decisionmaking control is held at the State level. Therefore, it would appear that there would be little need to educate the local coordinator in these matters. California seems to be exceptional in permitting a great deal of local autonomy in decisionmaking. One explanation may be the sheer size of California. For many States, the capital is so close to the local government that the State can easily assume total responsibility in this area.

The objective of the Radiological Emergency Response Operations Course (Exhibit 13) is to provide training to respond to radiological emergencies. It is especially designed for State and local government radiological emergency response personnel. The course is conducted at the U.S. Department of Energy's Nevada Test Site by the Reynolds Electric and Engineering Company under contract to NRC and lasts 8½ days. There are 20 students per course.

Participation at the State level has been adequate with 283 participants from January 1977 through February 9, 1979 attending. Local government participation has been reasonable in only a handful of States with 97. One reason may be that a considerable number of States want to retain control over radiological matters for the same reasons previously mentioned (for example, Delaware, New Jersey, and Tennessee). Others share the responsibility with Alabama, California, Florida, New York and Washington as some examples of the other point of view. The most outstanding complaint of the students is that they become frustrated when they return home and have to contend with comparatively antiquated equipment or no equipment at all. Without hands-on practice as developed at the Nevada site, they believe that their newly acquired skills will atrophy quickly. From February 9 through July 31, 1979, seven additional courses were held with attendance limited to 20 State and local officials per course plus a small number of Federal observers. States from all over the country were represented. Additional courses are scheduled throughout the remainder of the year.

The total cost for the 20 courses offered from January 1977 through February 9, 1979, was \$735,000. Of this, \$500,000 was included for tuition and \$235,000 for travel and per diem. Average tuition per student was \$1250. Average travel and per diem was \$618. Average total cost per student was \$1,868.

The development of a single comprehensive curriculum for all radiological emergency planning and preparedness training courses is viewed as extremely important by the Interorganizational Advisory Committee (IOAC). The Committee points out that there is a real need for coordination of the training for the first-at-the-scene (fire, police, rescue, medical, etc.) with other plans and preparedness training for local and State and government officials. A comprehensive approach would train for transportation related accidents in addition to those associated with fixed facilities, such as nuclear power stations. The various levels of personnel requiring training in planning and preparedness is indicated in Figure 1.

In addition to training, there is a need for a basic manual to guide and assist State and local officials. This manual should be written in non-technical terms and cover the basic topics, such as the nature of the threat and measures to protect the public, operational planning, capability development, evacuation concept, shelter, warning and communications, and public information. Additional information should include the use of civil defense detection equipment, emergency protective measures and operational readiness criteria.

Some States try to pass onto other State and local officials some of the lessons acquired by attending NRC sponsored courses. This inquiry was limited to attending courses in Florida and Connecticut. The Florida course in Dade County (Turkey Point 3 and 4) allowed the relevant State, local, and Florida Power and Light Company personnel to meet and discuss the various emergency response issues. The first day's curriculum included:

- Basic health physics;
- Reactor fundamentals;
- Possible reactor malfunctions;
- Utility emergency procedures; and
- Florida Radiological Emergency Plan.

FIGURE 1. OVERALL TRAINING REQUIREMENTS

LEVEL OF TRAINING	ORGANIZATION REQUIRED TO BE TRAINED	TYPE OF TRAINING								
		PLANNING	PREPAREDNESS (OPERATIONS)							
FEDERAL	REPRESENTATIVES OF AGENCIES INVOLVED IN NUCLEAR INCIDENT EMERGENCY PLANNING ASSISTANCE AND REVIEW	X	EXISTS							
STATE	<div style="border: 1px solid black; padding: 5px; text-align: center;"> CIVIL DEFENSE, HEALTH, ENVIRONMENTAL RESOURCES, PLANNING AGENCY, ETC. </div>	X	X							
LOCAL GOVT.	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> COMMUNITIES (HEALTH, CIVIL DEFENSE, HOSPITAL, PUBLIC SAFETY, ETC.) </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> SHERIFFS </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> OTHER LOCAL AGENCIES </div> </div>	X	X							
FIRST AT THE SCENE	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 12.5%;">FIRE</td> <td style="width: 12.5%;">POLICE</td> <td style="width: 12.5%;">RESCUE</td> <td style="width: 12.5%;">MEDICAL</td> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> </tr> </table>	FIRE	POLICE	RESCUE	MEDICAL					X
FIRE	POLICE	RESCUE	MEDICAL							

Source: "U.S. Radiological Emergency Response Planning and Preparedness Training Programs (Fixed Nuclear Facilities and Transportation)," H. E. Collins, Office of State Programs, U.S. Nuclear Regulatory Commission, p. 353 in "Handling of Radiation Accidents 1977," International Atomic Energy Agency, IAEA-SM-215/19, Vienna, 1977.

The second day's curriculum included:

- Health effects;
- Instrumentation fundamentals, readings, and limitations;
- Civil defense instruments;
- Instrument exercise;
- Protective action guides;
- Dosimetry and use of existing, environmental monitoring network;
- Dose projections, safety considerations, decontamination, protective measures, reentry;
- Local civil defense procedures; and
- Division of Disaster Preparedness, communications and warning.

In addition, visitors from Sweden and Switzerland (Ref. 6) spoke about radiological emergency response plans and preparedness in their respective countries. A film on the U.S. Army SL-2 experimental reactor accident was shown. According to Florida authorities, three two-day courses are given annually. They are conducted in the region impacted by the three nuclear power stations in Florida with the utilities always participating.

The Connecticut one-day course was not as ambitious as Florida's. Talks directly relevant to local emergency response planning and preparedness included:

- A slide show of the Tri-Town exercise dealing with Millstone 1 and 2 by the First Selectman of Waterford, and
- A description of light water reactors by a Combustion Engineering spokesman; and
- Connecticut Radiological Defense (RADEF) status.

Invited Federal speakers discussed the future of radiological defense and the status of Federal response. Combustion Engineering, as a good neighbor and public spirited corporation, offered its cafeteria for a meeting place and supplied lunches for the approximately 50 people in attendance.

It is difficult to estimate the costs to State and local governments for these training activities. They vary considerably from one State to another and would depend on the number of nuclear power stations in the State. Utility participation in training sessions is spotty - some utilities do something and others do not. An estimate of the costs might also include hazardous material and transportation institute costs, as related historically by State and local governments. Based on the above, an upper bound of \$10,000 per year seems reasonable.

RESOURCES

State Government

Communications Systems

Good communications systems have been pointed out by many State and local emergency personnel as the most cost-effective element of emergency preparedness. There are three basic sub-systems in communications: notification, command, and tactical.

Notification of the State government of an emergency condition by the operator of the nuclear power station can be made by specially dedicated phone lines (hot lines), by use of the National Warning System (NAWAS), or by commercial telephone. When a hot line or NAWAS is used, the regular telephone lines are used as a back up. Prompt notification of State and local civil defense/emergency services and/or radiation health personnel by the operating utility is of much concern, even before Three Mile Island. In general, most State and local officials complain that there is too much utility management intervention causing delay before the proper authorities are notified. At least one State, Oregon, has automatic notification of the Radiation Control Section of the Oregon State Health Division. Anytime any of five monitors is actuated at the Trojan nuclear power station, the Oregon State Police at Salem is alerted. The duty officer in turn notifies the Radiation Control Section for decisionmaking purposes. Oregon paid for this installation.

The greatest weakness in any of the notification systems is the off-duty notification capability; i.e., from 5:00 p.m. to 8:00 a.m., Monday through Friday and all day Saturday and Sunday. Many civil defense and radiation health personnel are completely dependent on the phone ahead system which is considered to have a number of gaps which could be considerably reduced by pagers, or tone alert walkie-talkies. These systems are not viewed as very expensive. A simple pager costs a few hundred dollars. A tone alert walkie-talkie with a repeater to a car radio may cost as much as \$1,500. For example, the Tennessee Civil Defense and Emergency Preparedness personnel have four-channel two-way pagers with a repeater to a car that may represent the ultimatum system at a cost of \$2,000.

Command systems include the communication system at emergency operation centers (EOCs) and mobile communications systems, such as automobiles and vans, that can be deployed to the site. Generally speaking, civil defense authorities are better equipped than radiation health personnel. There are some notable exceptions, such as the Florida Mobile Emergency Radiological Laboratory (MERL) which acts as a communications center as well as a lab. Strength in communications has been recognized in a number of States. For example, newly passed disaster legislation in New York, effective April 1, 1979, will have the objective of providing State and local governments the communications capability of wartime except in peacetime. Alabama has plans for a \$250,000 improvement in communications at the State level that will become effective in 1980. The objective is to eliminate many of the dead spots and delays in notification throughout the State. Counties, however, will be obligated to buy their own transmitters and receivers. In spite of this upgrading, Alabama Radiation

Health will continue to rely on Civil Defense and State Police for communications. For many other States, communication dead spots will not be eliminated until the FEMA communications satellite becomes operational during the 1980s.

The FEMA Emergency Satellite Communications System is used for quickly setting up communications after any kind of peacetime natural or man-made disaster. System features include the use of small ground stations which could be brought into a disaster area and set up within about 2 hours after notification of the disaster. The ground stations would provide operational communications via satellite to other ground stations located in State capitals and Washington, D.C. The system can be set up for about \$4 million a year for the first 5 years. Perhaps such a system could have alleviated some of the communications overloading at Three Mile Island. Future use of the FEMA satellite for such emergencies should be explored.

Tactical communications systems are usually considered to be walkie-talkies and are required by State and/or local radiation health response team personnel to rapidly report back radiation measurements to the command EOC. Very few State radiation health divisions have such instruments. They are usually dependent upon other agencies, which are usually civil defense and State police. With a number of States building up a response capability to deal with transportation accidents involving hazardous materials, tactical communications associated with this capability may become rapidly deployed in support of the State radiation health division. Thus, an independent tactical communications capability may not be necessary. For example, Tennessee is in the process of purchasing and deploying 12 vans that are fully equipped for response to hazardous materials, mainly of a chemical nature. Each van is equipped with five-channel communications as well as walkie-talkies. Over \$300,000 of State money is being used to pay for this system which is matched by Federal Highway Trust Funds.

Dose Assessment Systems

Of some concern is the relative cost of alternative dose assessment systems, and which governmental entity should pay for them. There are basically three approaches: survey teams, computer systems, and ring systems. Available cost estimates for the three kinds are scarce. Nonetheless, some attempt is made here to estimate the costs.

Eight to 16 survey teams of two members each are proposed by the Federal Interagency Task Force on Offsite Emergency Instrumentation for Nuclear Incidents (Ref. 7). Sixteen teams would allow one team per 22.5° sector around the facility. A 100 percent replacement of survey team personnel should be available as backup in case the release lasts longer than 12 hours. Therefore, training would be necessary for preferably 32 teams, or 64 persons. Assuming that the State has the people and all emergency personnel take the NRC radiological emergency operations course, total training costs would amount to about \$120,000 at \$1,868 each. This does not include salaries paid by the State during the course. The Task Force assumes that Civil Defense instrumentation is used at a minimum. More sophisticated equipment could be used if available. NRC has a developmental contract with Brookhaven National Labs to modify some civil defense instruments so that they can be used for radioiodine detection (Ref. 8, 9). The field monitors are being field tested by Idaho National

Engineering Laboratories and some were tested out at Three Mile Island. The total purchase cost for the States is \$200,000 for 1,000 monitors. Maintenance costs are \$20,000 per year. The cost per monitor of \$200 is borne by the NRC. Maintenance will be paid by NRC. Ownership is retained by NRC. Therefore, the assumption is made here that no costs are assigned to the States for instrumentation. Annual costs for exercises and training are assumed to be 10 percent of the initial cost or \$12,000. The principal drawback of the survey team approach is the long time required to deploy the survey teams, acquire the data to delineate the contaminated area, and to determine the dose. Rapid mobilization and involvement of the Federal government, for example by activation of the Interagency Radiological Assistance Plan (IRAP) (Ref. 10), could possibly eliminate the need for the training of a backup team and some instrument costs. However, in the spirit of scoping out the costs to the States, no Federal government cost credit is assigned to the States.

Computer systems vary according to increased sophistication from isopleths, tables, and minicomputers to the Atmospheric Release Advisory Capability (ARAC). Some States use isopleths to forecast dose until some kind of survey team can confirm the mathematical projections. Most utilities use the same system. Tennessee has developed a system of tables that it claims is more reliable to use under stress conditions, since it is easy to make a mistake with the isopleths.

Florida took the table concept a step further without much cost, by using hand-held programmable computers to estimate dose at various distances before a confirmatory survey team is sent around the site. This development costs less than \$500, including the cost of the computer and the programs, which is tailored for the meteorology at each site.

Oregon adapted a computer program (Sub-dose) from Hanford to use at Trojan to project dose. This system provides a TV screen display and hard copy output. The Oregon system is considered to be the most advanced of any State. Developmental cost is estimated at \$10,000. The Oregon group believes that a superior version in terms of speed and accuracy would cost from \$50,000 to \$100,000.

Finally, ARAC is under development at the Rancho Seco facility of the Sacramento Municipality Utility District (SMUD) by Lawrence Livermore Labs (LLL). This feasibility study is funded by NRC. The Office of State Programs, NRC, contribution for completing the study by the end of FY 1980 is \$100,000. (See Appendix D for a brief description of ARAC.) According to State and local emergency personnel, as well as representatives of SMUD, LLL and NRC, ARAC can provide the data base on which response plans could be developed, training could be based, and decisions could be made during an actual emergency. Several series of event parameters could be developed and initial protective measures indicated that could be implemented early in a major event, the period during which hard data from survey teams will not be readily available. Also, ARAC could provide a basis for selecting the recovery procedures to be used. According to people currently working with the system, the principal technical weakness is the lack of adequate weather input information into the complex meteorological computer model. Because of the lack of data, simplifying assumptions are made and ARAC reduces to something similar to the system currently being used by Oregon and

Florida. The one-time initial costs of implementing ARAC at Rancho Seco are estimated to be about \$125,000 (\$50,000 for hardware, \$55,000 for software customization, and \$20,000 for training and familiarization of personnel). Site facility operating costs should not exceed \$7,500 per year. Rancho Seco's share of the central facility operating costs remains an open question, but should not exceed \$25,000 per year. All of the above dose projection methods by computer still need some level of surveying to verify the mathematical calculations.

A ring system with an immediate automatic State alerting function is proposed by Alabama. The system would place eight gamma measuring stations within two miles of each nuclear power station in Alabama. Each gamma measuring station would consist of a pressurized ion chamber and regular ion chamber with associated electronics. Readings would be transmitted to a central processor. An historical record would be kept for environmental monitoring. If high level nonroutine releases are measured, State authorities are automatically and immediately alerted. This dual-purpose system is estimated to cost from \$325,000 to \$400,000 for the three nuclear power stations in Alabama. Annual maintenance should cost about \$40,000 or less. If a central processor is not used, the cost would be approximately \$70,000 per nuclear power station. Alabama believes that this is the method in which future programs should operate to assure public confidence. The current view of some NRC staff on this matter is that the system is too expensive in view of the benefits.

As discussed in Chapter 2, Illinois is planning to install an offsite monitoring system at LaSalle Nuclear Power Station as a prototype. After the system is perfected, the system will be deployed to the other stations.

The relative merits of the three competing systems (i.e., survey teams, ARAC and rings) have not been fully established. Nevertheless, for a State having one nuclear power station, they all have one feature in common - they all cost very roughly \$100,000 with annual maintenance costs of roughly \$10,000. For States with more than one nuclear power station, the survey teams seem to exhibit the strongest economy of scale since the instrumentation is portable. The system beyond current capability that will finally be adopted by individual States is not clear at the present time. If NRC continues to pay \$1868 per person for radiological operation training courses, it is most likely that States will opt for the survey team system. On the other hand, if the training monies were put into ARAC or ring systems, the same objective may be accomplished at roughly the same cost, and the States would adopt this method. Some kind of mixture of the three systems may be a desirable approach.

Local Government

Communications Systems

Notification of local government emergency personnel by the operators of the nuclear power station in the event of an emergency condition is accomplished either directly or indirectly. Some States require that the State be contacted first. The State then notifies the local government. Other States have essentially simultaneous notification procedures. Sites that require two-State planning sometimes have problems in coordinated notification. A system

involving simultaneous notifications would be better. Commercial phones, dedicated phones, and National Warning System (NAWAS) are all used for direct contact, depending on the site. As in the case of States, whichever system is used, notification during off-duty times is the weakest link assuming that there is no utility management hangups in prompt notification. An improved capability in off-duty notification would be very helpful. This could be accomplished by pagers or tone alert walkie-talkies as previously described for States. The costs would be similar.

An independent and redundant system that is being deployed for security reasons can also be used for emergency communications at no additional cost to local government. The system can fulfill the requirement for continuous radio or microwave two-way voice communication between local law enforcement authorities and the nuclear power station. [See 10 CFR 73.55 (f)(3).] Put into effect in 1977, this system, in addition to redundant notification, has the added advantage of supplying feedback information to the nuclear power station. From conversations on the local Sheriff or police radio, the operators at the nuclear power station should be able to determine the status of the required action at the local level, and take additional steps if necessary.

Generally speaking, local governments situated in areas with reasonably developed infrastructures have adequate command systems - EOCs or communications vans. However, they still seem to be sparsely equipped in terms of tactical communications, such as walkie-talkies. Some local civil defense divisions are under-equipped or lack radio communications entirely. Of the 24 sites sampled, there are 10 outstanding examples in Exhibits 5, 6, and 7: Twelve Towns (Haddam Neck), Tri-Town (Millstone 1 and 2), Citrus and Levy Counties (Crystal River 3), Ocean County (Oyster Creek), Oswego County (FitzPatrick and Nine Mile Point 1), Lake County (Zion 1 and 2), New Castle County (Salem 1), Columbia County (Trojan), Jackson County (Bellefonte 1 and 2), and Rhea and Meigs County (Watts Bar 1 and 2). Installation of adequate command and tactical communications systems should initially add approximately \$30,000 to local government costs.

There are many types of warning systems that are currently used for alerting the impacted population in the event of an emergency. It is generally accepted that a universal warning system is lacking. Therefore, emergency planners depend on many warning modes, some of which may be redundant. They include door-to-door, telephone, mobile public address, (e.g., police cruiser, fire truck, boat, snowmobile, and helicopter), radio-TV, Emergency Broadcast System, sirens, and tone alert systems.

There is little enthusiasm for sirens. Some emergency personnel believe that they are obsolete warning systems even though they are central items in civil defense warning of the public. Major disadvantages include: (1) the difficulty of hearing in residences during the winter because of sound absorption by snow and well-insulated houses (a negative spin off from the government weatherization program) and during the summer because of sealed up homes and air-conditioning; and (2) the high cost per residence when used in relatively sparsely populated areas.

An alternative to sirens, or other traditional ways of warning, may be the NOAA storm alert radio. This is a method for the swift alerting of entire populations of metropolitan areas

to fast-breaking weather, such as tornadoes and flash floods. NOAA Weather Radio has grown into the primary means by which the National Weather Service (NWS) plans to spread storm and flood warnings rapidly throughout the nation. By 1980, well over 300 stations will be capable of serving about 90 percent of the U. S. population. The NOAA storm alert radio is specialized to pick up only NWS stations. A warning tone transmitted by NWS will provoke those radios into making some sort of attention-getting signal, even when they are not playing. Under a January 1975 White House policy statement, NOAA Weather Radio was designated the sole Government-operated radio system to provide direct warnings into private homes for both natural disasters and nuclear attack. Various NOAA storm alert models range in price from \$25 to \$70 (Ref. 11). Over one million are reported to be already purchased.

In cooperation with NOAA, the Tennessee Valley Authority is considering using these devices in the vicinity of Watts Bar in Rhea and Meigs Counties, Tennessee. There is also some talk about using it at various other sites throughout the TVA system and also as a dam failure warning system. The storm alert radios are especially tailored for sparsely populated areas with little in the way of traditional warning systems, such as by PA systems or police cruisers. NOAA tests indicate full coverage within 5 miles of Watts Bar. Flat terrain coverage is 40 miles. Costs for 500 units at quantity prices of \$30 would be \$6,000. Annual maintenance and replacement costs are estimated at about \$1,000 to \$2,000. TVA would make the storm alert radios available to people and businesses in the area. However, they would remain the property of TVA. Tennessee State government and local officials have not yet come to any final decision as to its acceptability. Further research into this method of warning appears to be justified since there is a nationwide trend to site future nuclear power stations in less populated areas than in the past.

Dose Assessment Systems

Most States have adopted the policy that local governments should not concern themselves with dose assessments. This seems to be acceptable for those local governments where the State personnel are so near that they act as if they were local government. When it takes several hours for the State to arrive with their survey teams, local governments feel uneasy during the interim in relying so much either on utility estimates and/or State computations. Some would like to establish their own survey teams.

For those States where there is some kind of shared responsibility in this regard, it does not seem clear what level of capability is necessary, short of duplicating the State effort. Cost data in this area is sparse. Exhibits 5, 6, and 7 review this situation at the local government level. (See Resources in the Exhibits for the 24 examples.)

Protective Measures for Emergency Workers

There is no consensus within Federal, State and local governments regarding self-reading dosimetry. Some States (for example, Tennessee) are not requiring dosimetry for certain emergency workers, such as police directing traffic. Other States, such as Florida, are requesting that all emergency personnel use self-reading dosimeters with a range of 0 to 200 mR. The objective is to limit exposure to 100 mR. Other States are using self-reading

dosimeters with a range of 0 to 200 R. The Federal interagency instrument task force recommends wearing two self-reading dosimeters, one with a range of 0 to 20 R and another with a range of 0 to 200 R (Ref. 12). In this way a range from about 0.4 R to 200 R would be covered. The objective in this case is to limit exposure to 25 R.

The instrument task force believes that the Civil Defense dosimeters having a range of 0 to 200 mR are not suitable for field use because they are not sufficiently rugged. Furthermore, there are no more of these dosimeters available beyond those used in training kits. Total supply in the United States is estimated to be about 30,000. Commercially available ones cost roughly \$50. On the other hand, those with a range of 0 to 20 R and 0 to 200 R are in plentiful supply at no cost to State and local governments. The Interorganizational Committee (IOAC) takes issue with the recommended nonuse of the low range dosimeters. The IOAC recommends that FEMA should inventory the CDV-138 (0 to 200 mR) dosimeters and have any excess or surplus distributed to jurisdictions involved in emergency response at nuclear power stations.

A more commonly agreed on policy in this area may result in additional costs or savings to local governments. Although no overall cost estimate is available, the equipping, for example, of 100 personnel per site with reliable self-reading 0 to 200 mR dosimeters at \$50 per unit could result in an additional cost of \$5,000 for local governments in the area of a nuclear power station site.

Other issues highlighted by State and local governments having cost impacts include: breathing apparatus, such as Scott airpaks; face masks with filters for radioactive iodine; thermoluminescence dosimeters (TLD); and potassium iodide (KI) pills for thyroid blocking agents. The levels of these costs do not seem to be too high.

OTHER CONSIDERATIONS

Utility Assistance

The amount of utility assistance to State and local governments can offset to some degree the costs that these governments have to incur for plans and preparedness. Although an exhaustive tabulation was not attempted, a summary of 12 States presented in Exhibit 14 should indicate the level and the variation that exists.

Northeast Utilities is the only utility that helped State and local governments in their plans to a significant extent. Florida Power and Light Company and Florida Power Corporation are the two utilities that aided a State in a major way in terms of funding by means of annual grants of \$100,000 per year for four Florida radiation health emergency personnel and funds for radiological equipment - \$70,000 for the Mobile Radiological Emergency Laboratory. To a lesser extent, Public Service Electric and Gas supplied New Jersey and Delaware with some communications and radiological emergency equipment and Portland General Electric helped fund the Columbia County plan and equip it with communications.

Training by utilities of State and local government emergency personnel has been very spotty. This is in spite of the fact that 10 CFR Part 50, Appendix E, Section II(F) requires as a minimum, "The training program for employees and for other persons, not employees of the licensee, whose services may be required in coping with an emergency." One cause for the lack of utility response may be the lack of adequate NRC guidance.

NRC Concurrence

If a State wants to qualify for NRC concurrence, more than likely both State and local governments will have to improve their plans and preparedness to comply with the minimum requirements as presented by the 70 essential "associated checklist elements" of Supplement No. 1 of NUREG-75/111. This will result in additional costs.

Defense Civil Preparedness Agency (DCPA)

The capacity of DCPA to maintain its matching Personnel and Administration Funds at current levels is coming into question. The national \$35 million ceiling is certainly one constraint. Another limiting factor is the restriction of matching grants for the design, construction, and equipping of State and local emergency operating centers and the procurement and installation of related capital equipment for such civil defense supporting systems as warning and communications. For these reasons, a State and local dollar in the future will not go as far as it has in the past. The result is increased State and local government costs.

Department of Energy/Department of Defense Installations and Privately Owned Radiation Facilities

State and local governments are just beginning to appraise radiological emergency plans and preparedness of DOE facilities, such as the Hanford Works and Oak Ridge, and DOD facilities, such as the Trident and New London submarine bases in addition to privately owned radiation facilities. The overall situation is apparently lagging far behind what has been done to date in support of commercial nuclear power stations at all levels of government. Costs to State and local governments are bound to increase if these governments are to fulfill their responsibilities to protect the health and safety of the people. Some funds from DOE, DOD and private facilities could be very helpful in these cases and could have a beneficial spinoff to better prepare State and local governments in their planning and preparedness activities related to commercial nuclear power stations.

From the perspective of the Interorganizational Committee (IOAC), the entire picture of DOD/DOE facilities and large privately owned radiation facilities should be addressed in a coherent fashion. The probability of various occurrences at these facilities and their ultimate impact should be appraised. The IOAC recommends that Federal funding be made available to State and local communities to develop the necessary radiological emergency response plans and preparedness.

Transportation

Radiological emergency planning and preparedness for transportation accidents have some points of commonality in relation to fixed facilities, such as nuclear power stations. One view is that there is basically little difference, except in the case of a nuclear power station, since you know in advance where the accident is going to occur. Some of the significant differences, in addition to unknown location, for transportation accidents are:

- Smaller source terms and attendant lower risks;
- Greater frequency of occurrence of minor consequence incidents that will draw public interest and concern;
- All States and many local governments within the States need coordinated plans;
- There is seldom any radiological expertise on the scene until some time after most incidents occur; and
- Effective plans and preparedness within a State will result in shallow capabilities of broad geographic coverage that can readily draw on in-depth capabilities from strategic locations within the State.

The radiological emergency response plans and preparedness for transportation accidents must be closely integrated with the system for nuclear power stations, at least at the top levels in a State. Exploitation of these facts should help reduce costs to governments for both activities while better protecting the health and safety of the people.

Independent Capability

Because the public lacks confidence to a certain extent in utilities, Federal, State, and local governments, there is a tendency toward duplication of functions. An example is that a local government wants to have radiological surveying capability that is independent of the State and the Federal governments and that can verify what the utility says. Costs are bound to increase in this situation as a third layer of protection is added on. Whether the resulting increase in public confidence is worth the cost seems to remain an open question which is being debated at various levels of government.

Inflation

Almost all State and local government officials point out that inflation impacts cost estimates considerably. The result is that inflation contributes to uncertainty in attempting to estimate costs. Some attempt has been made to make reasonable adjustments. However, little attempt was made to adjust historical costs to current dollars. It is not expected that any errors due to inflation that are not accounted for in this report should alter any of the conclusions.

MODEL COSTS

For a variety of reasons, it is useful to gain a national perspective with regard to the costs to State and local governments for adequate radiological emergency response plans and preparedness in support of nuclear power stations. For the purposes of the estimation, adequacy is equated with NRC concurrence in a State and local plan. More of the details are given in Appendix C. An estimate is achieved by using as a basis the historical costs to date and revising them in view of the various analyses and findings made in this report.

A typical State would incur the following costs:

Plan		
	Initial	\$50,000
	Update	\$ 5,000 per year
Preparedness		
• Exercises		\$10,000 per year
• Training		
	Initial	\$10,000
	Update	\$ 2,000 per year
• Resources		
	Initial	\$100,000
	Update	\$ 10,000 per year.

The estimated costs cited above differ only from the historical costs reported in Chapter 2 in one respect - Resources. Here, an additional \$30,000 is allocated for communications initially and \$3,000 per year for update.

There are 25 States with operating nuclear power stations and 6 States contiguous to these. By the end of 1980, an additional 3 States are forecast to have operating nuclear power stations with an additional 2 contiguous States. Thus, 36 States require concurrence by the end of 1980. Assuming the above estimated costs for plans and preparedness, the initial costs for the 36 States is estimated to be about \$6.1 million and the annual costs to be about \$970,000. A comparison of the figures show that the initial costs are substantially higher (6.3 times) than the annual costs.

Three additional States are forecast to require concurrence by 1982 and one by 1987. No other States should require concurrence through the year 2000. The national present value costs* to State governments for the time frame 1980-2000 is estimated using the time schedule

*Present Value (or Present Worth)--The worth of a sum of money in hand today, which is considered to be equivalent to a larger amount available at some date in the future. The calculation of the "present value" of those expenditures or benefits (incomes or savings) that are expected to occur in the future is used in a comparison between variously timed future expenditures and immediate expenditures required to produce certain benefits--a comparison made in order to estimate whether or not the expenditures are justifiable, and to evaluate relative merits of alternatives having different expenditure-time patterns. For example, the present value of annual payments of \$1 over a 20-year period is \$8.51 at a discount rate of 10 percent. The present value of \$1 paid in the 20th year is 14.9 cents at a 10 percent discount rate.

shown in Appendix C and a 10 percent discount rate. The national present value cost to States is \$16 million.

The national cost to local government for plans and preparedness is estimated in a similar way and this is shown in Appendix C. There are 53 sites in operation in 1979. Five more are forecast to be operational in 1980. A smaller number of sites require plans and preparedness on a yearly basis from 1980 through 1990. The total number of sites forecast is 101 for the time frame 1979-2000.

Typically, local government cost involves two jurisdictions per site and is:

Plans

Initial	\$20,000
Update	2,000 per year

Preparedness

- Exercises \$10,000 per year
 - Training None. Training is assumed to be done by State.
 - Resources
- | | |
|---------|----------------|
| Initial | \$30,000 |
| Update | 3,000 per year |

For the 58 sites for 1979-1980, initial costs total \$3.5 million and the annual costs total \$870,000. As in the case of the States, the initial costs are four times greater than the annual costs. The national present value cost to local government for the time frame 1980-2000 for the 101 sites is \$16 million. The combined national present value cost to State and local governments is \$32 million. Note that from this combined total, the initial cost of \$9.6 million is a substantial fraction (30 percent). This means that the front end costs are great compared to the total cost.

EXHIBIT 8. RADIOLOGICAL EMERGENCY RESPONSE PLANNING COURSE IN SUPPORT OF FIXED
NUCLEAR FACILITIES - STATE AND LOCAL GOVERNMENT PARTICIPATION AND COSTS

<u>State</u>	<u>Government Participants</u>	
	<u>State</u>	<u>Local</u>
Alabama	3	2
Alaska	-	-
Arizona	4	1
Arkansas	2	1
California	7	29
Colorado	1	5
Connecticut	2	5
Delaware	7	1
District of Columbia*	4	-
Florida	6	4
Georgia	2	2
Hawaii	-	-
Idaho	3	-
Illinois	5	5
Indiana	4	4
Iowa	1	5
Kansas	2	1
Kentucky	3	7
Louisiana	5	5
Maine	3	1
Maryland	4	3
Massachusetts	2	2
Michigan	4	7
Minnesota	1	3
Mississippi	3	-
Missouri	4	2
Montana	4	-
Nebraska	3	1
Nevada	3	2
New Hampshire	4	1
New Jersey	4	1
New Mexico	2	-
New York	12	35
North Carolina	4	3
North Dakota	4	1
Ohio	2	4
Oklahoma	4	1
Oregon	1	3
Pennsylvania	8	11
Puerto Rico*	3	1
Rhode Island	1	-
South Carolina	4	1
South Dakota	2	-
Tennessee	4	2
Texas	23	3
Utah	3	-
Vermont	3	3
Virginia	4	2
Washington	7	4
West Virginia	2	2
Wisconsin	3	3
Wyoming	4	-
Totals:	200	179

Total travel and per diem cost for the 12 courses conducted from 1975 through 1978:
\$91,000.

Average travel and per diem cost per participant: \$220.

Note: A few State employees working at the regional level were considered to be local government participants.

* District of Columbia and Puerto Rico are included as States.

WHAT TO DO

WHERE TO GO

IN CASE OF A

NUCLEAR

ACCIDENT

ALERT SIGNAL

KNOW THIS SIGNAL!



A STEADY BLAST LASTING 3 - 5 MINUTES ON SIRENS AND HORNS

IN AREAS WHERE THE ALERT SIGNAL CANNOT BE HEARD, OTHER MEANS OF NOTIFICATION WILL BE BY MOBIL PATROLS AND HELICOPTERS WITH PUBLIC ADDRESS SYSTEMS.

WHEN YOU HEAR THIS SIGNAL: GO INDOORS AND CLOSE ALL WINDOWS AND DOORS.

TUNE IN TO ONE OF THE FOLLOWING RADIO STATIONS AND LISTEN FOR INSTRUCTIONS

WMVB-FM	- 97.3 (Millville 24 Hour Coverage)	WJIC - 1510 (Salem)	24 Hour Coverage
WMVB	- 1440 (Millville)	WNNN-FM (Canton)	in Event Of Accident
WSNJ	- 1240 (Bridgeton)	WWBZ - 1360 (Vineland)	
WSNG-FM	- 107.7 (Bridgeton)		

IF YOU ARE ORDERED TO EVACUATE: USE THIS CHECK LIST.

- * SHUT OFF WATER, GAS, LIGHTS, AND HOUSEHOLD APPLIANCES.
- * KEEP YOUR TELEPHONE FREE FOR EMERGENCY USE.
- * PUT HOUSE PETS INDOORS OR BRING THEM WITH YOU.
- * BRING ANY MEDICATIONS YOU MAY NEED - SPECIAL FOOD, PERSONAL ITEMS.
- * SECURE YOUR HOME. MEASURES WILL BE TAKEN TO PROTECT YOUR HOME.

IF YOU ARE HANDICAPPED OR NEED TRANSPORTATION TELEPHONE 935-7302 AND YOU WILL BE EVACUATED BY EMERGENCY WORKERS.

IF YOU NEED PUBLIC ACCOMODATIONS, PROCEED TO THE VINELAND NATIONAL GUARD ARMORY.

DEPART AS SOON AS POSSIBLE. FOLLOW THE SHORTEST ROUTE TO MAIN HIGHWAY. KEEP CAR WINDOWS AND VENTS CLOSED WHILE TRAVELING. DRIVE SLOWLY AND CAREFULLY.

IF YOU HAVE CHILDREN ATTENDING SCHOOL THEY WILL BE TRANSPORTED TO THE VINELAND NATIONAL GUARD ARMORY. DO NOT ATTEMPT TO GO TO THE SCHOOL.

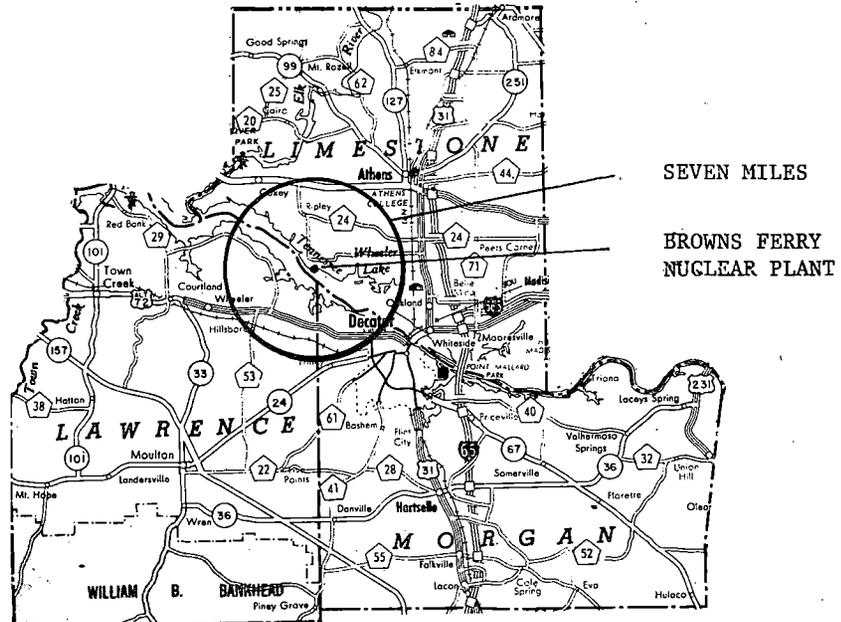
EMERGENCY INFORMATION MAY BE OBTAINED BY CALLING 935-4177.

- * BEFORE YOU LEAVE DISPLAY THIS CARD IN A PROMINENT PLACE ON FRONT OF YOUR HOUSE TO ADVISE ALERTING PATROLS THAT YOU HAVE DEPARTED.

FOR REENTRY INSTRUCTIONS - LISTEN TO RADIO.

EXHIBIT 10. CITIZEN EMERGENCY PLANS FOR BROWNS FERRY NUCLEAR POWER STATION

ATTENTION ALL CITIZENS IN MORGAN, LAWRENCE, AND LIMESTONE COUNTIES
(ESPECIALLY THOSE IN THE CIRCLED AREA ON THE MAP BELOW)



The State will be testing an Evacuation Plan for those residents near the Brown's Ferry Nuclear Plant. The dates for the test exercise will be February 28, 1976. This test exercise will involve city, county and several State agencies. There is no cause for alarm, this is a TEST exercise. Instructions for the people who would be required to evacuate in the event of an actual emergency are attached. Please read carefully and file for future reference. You will not evacuate for this Test Exercise. Thank you for your cooperation.

Alabama Civil Defense Department

EXHIBIT 10 (Continued)

MORGAN COUNTY CIVIL DEFENSE

For the evacuation of Morgan County residents due to disasters of all types including chemicals, explosions, or releases from the Browns Ferry Nuclear Plant.

- A. Begin evacuation when you hear the warning sound from the Sheriff's cars or other Civil Defense Officials in your area.
- B. Follow evacuation routes nearest you. DO NOT move against directional arrows or cross evacuation routes. Pick up pedestrians as you leave your area.
- C. If you do not have your own transportation, make plans to ride with a neighbor. Let your Civil Defense Office know now if you have no transportation. If you do not, transportation will be furnished for you and your family.
- D. If you have an invalid or some person needing special care or transportation, notify the Morgan County Civil Defense Office as soon as you read these instructions so that special arrangements can be planned for in advance.
- E. Items to take with you:
 - A. Change of clothes.
 - B. Important papers you have at home.
 - C. Medicine. Any special medication.
 - D. DO NOT CARRY FOOD OR PETS.
- F. LOCK YOUR HOME. TURN OFF THE GAS AND ELECTRICITY.
- G. When you have secured your home, tie a white cloth or towel on your front door so that Civil Defense Officials will know that you have gone.
- H. WHERE TO GO:

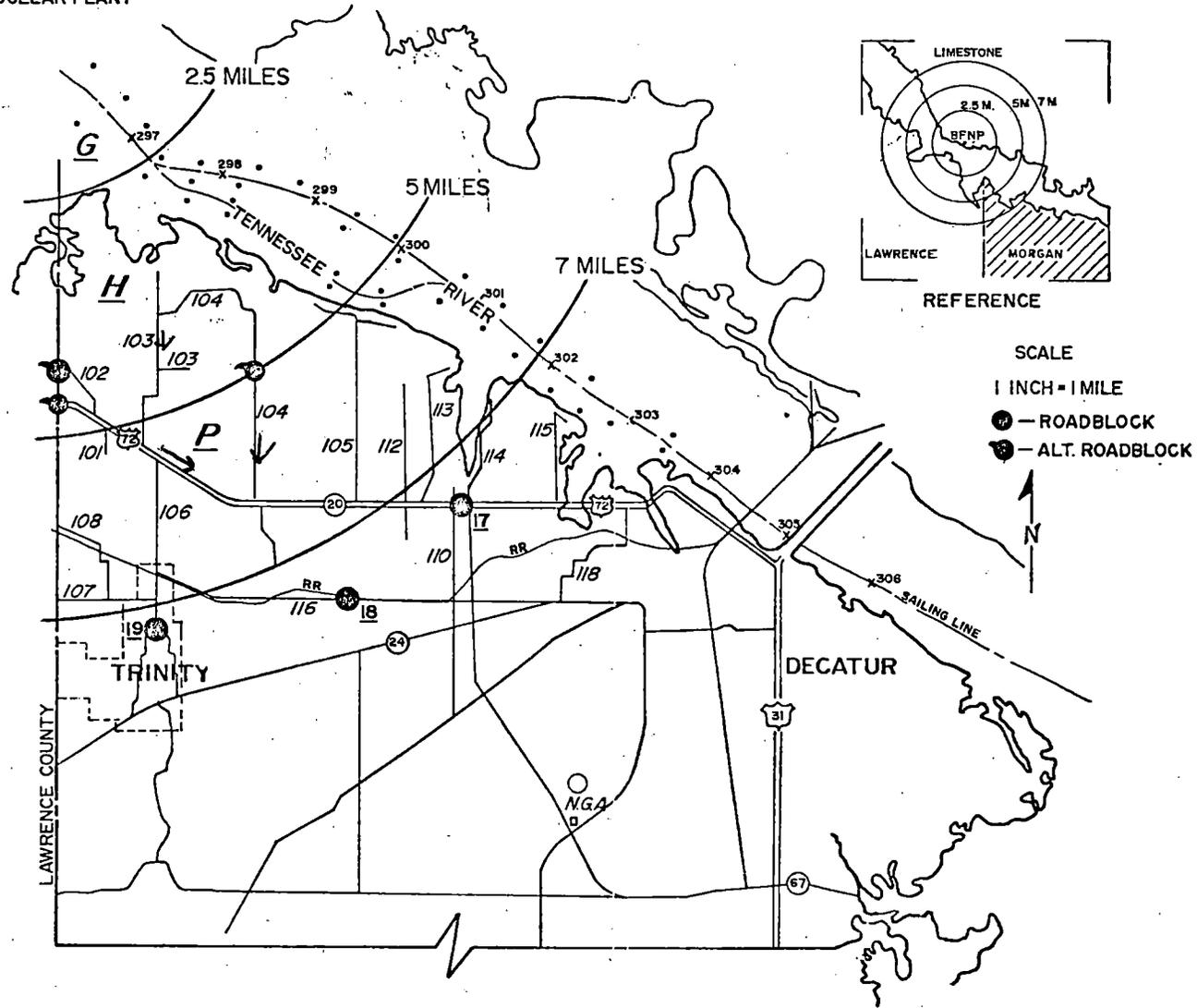
You will go to the New National Guard Armory Building, Beltline Highway, State Highway 67, on the By-Pass, Decatur. You will report to the reception center personnel for registration and further assignments. Make sure that all your family knows where to go and when. If you are separated from your family, the reception center will have a record of your location so family may reunite.
- I. Study the map on the reverse side. Find where you are now and where the reception center is located.
- J. For any additional information, contact your local Civil Defense Office, Basement, Morgan County Courthouse, Decatur, Alabama, telephone: 353-1502.
- K. TIME IS IMPORTANT-----MOVE FAST, BUT SAFELY.

DO NOT leave home or alter your plans during the Exercise on Feb. 28, 1976.

In the event of a real disaster requiring an evacuation of this area these are your instructions unless otherwise instructed at that time.

B-59
April 21, 1972

□ BROWNS FERRY NUCLEAR PLANT
PART I (MAP OF MORGAN COUNTY AREA) TO TAB E1



97-II

EXHIBIT 10 (Continued)

TOWNS OF EAST LYME & WATERFORD CITY OF NEW LONDON

EMERGENCY INFORMATION

IN THE EVENT OF A NATURAL OR MANMADE EMERGENCY SITUATION

Our community may never face a natural or manmade disaster. However, we must not forget that advance preparation is the only true insurance against the consequences of such calamities. This pamphlet will provide you and your family with the information necessary to take correct appropriate actions. The information contained here is generally applicable to the following types of emergencies—hurricanes, tornadoes, chemical spills, nuclear power plant accidents, large fires, etc. Officials of the Town have prepared a detailed emergency plan specifically designed to protect local residents. The plan contains descriptions of various protective actions and identifies evacuation routes, relocation and evacuation centers and emergency social services.

HOW YOU WILL BE WARNED

The siren system will sound an alert signal, which is a three to five minute steady wail. Police, fire and civil preparedness volunteers will make street by street notifications, utilizing mobile public address systems. Local television and radio stations will also broadcast emergency warning information.

WHEN WARNED OF AN EMERGENCY

1. Tune to your local radio or television station for official information and instructions:

<u>Radio</u>	<u>AM</u>	<u>FM</u>	<u>Television</u>
WTIC	1080	96.0	Channel No. 3, Hartford
WSUB	980	105.5	Channel No. 8, New Haven
WNLC	1510	100.9	Channel No. 10, Providence
WLIS	1420	—	Channel No. 13, Public Information Connecticut College

Emergency broadcasting services during off hours will occur.

2. If your neighborhood is affected, police and fire mobile address systems will be making announcements and providing information.
3. **DO NOT CALL** the local town office, fire or police departments except in emergencies. The Town's general information telephone numbers are:
in **WATERFORD 442-9364** in **NIANTIC 739-6931** and in **NEW LONDON 443-2861**
4. Stay tuned to your local radio or television station for details.

CLIP AND SAVE

REMEMBER, WHATEVER ACTION MUST BE TAKEN — DO NOT PANIC. PROCEED IN A CALM, ORDERLY FASHION, AND FOLLOW THE DIRECTIONS OF YOUR LOCAL OFFICIALS.

EXHIBIT 11 (Continued)

Do not discard this instruction sheet — Please place in your telephone directory, or in some other handy location.

IF YOU ARE IN AN AREA WHERE PEOPLE ARE DIRECTED TO THE SHELTER

1. Go indoors and close all doors and windows.
2. Turn off air conditioners or fans, if circulating outside air.
3. Use the telephone only in emergencies.
4. The food, water and milk supplies in your homes are safe for consumption.
5. An outside vegetable garden may become contaminated in the event of a chemical or radioactive release. Do not eat any of this produce, until advised.
6. Remain indoors until notified the emergency has passed.
7. Stay tuned to your local radio or television station for emergency information.

IF YOU HAVE BEEN ADVISED TO EVACUATE YOUR AREA

1. Turn off all appliances.
2. If possible, take blankets and extra clothing, also eye glasses, etc.
3. Bring special or prescribed medicines, infant needs, etc.
4. Secure your home or office.
5. Farm families — get livestock under cover, provide stored feed and water, secure buildings.
6. If you need transportation, call the telephone number given over the radio or television.
7. Keep car windows and vents closed.
8. Proceed in a calm, orderly fashion along designated evacuation routes to the designated registration or evacuation center.

KEEP THE FOLLOWING EMERGENCY SUPPLIES ON HAND

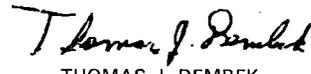
1. Flashlight
2. Battery operated portable radio
3. First Aid Kit
4. Tool kit



C. FRANCIS DRISCOLL
City Manager — New London



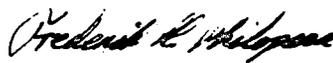
LAWRENCE BETTENCOURT
First Selectman — Waterford



THOMAS J. DEMBEK
Dir. of Civil Preparedness
Waterford



GEORGE J. SEEBECK
First Selectman — East Lyme



FREDERICK H. PHILOPENA
Dir. Civil Preparedness
New London



ROBERT D. HUGHES, JR.
Dir. Civil Preparedness
East Lyme

CLIP AND SAVE

Source: "The Day," New London, Connecticut, Monday, June 12, 1978, p. 22.
(Type reset for clarity.)

EXHIBIT 12. TECHNICAL MANAGEMENT COURSE FOR RADIOLOGICAL EMERGENCY RESPONSE COORDINATOR AND STAFF - STATE AND LOCAL GOVERNMENT PARTICIPATION AND COSTS

<u>State</u>	<u>Government Participants</u>	
	<u>State</u>	<u>Local</u>
Alabama	3	-
Alaska	-	-
Arizona	-	-
Arkansas	1	-
California	2	4
Colorado	2	2
Connecticut	1	-
Delaware	2	-
District of Columbia*	2	-
Florida	2	1
Georgia	3	-
Hawaii	-	-
Idaho	-	-
Illinois	2	-
Indiana	2	-
Iowa	2	-
Kansas	-	-
Kentucky	1	-
Louisiana	4	-
Maine	2	-
Maryland	2	-
Massachusetts	1	-
Michigan	-	-
Minnesota	4	-
Mississippi	2	-
Missouri	2	-
Montana	-	-
Nebraska	1	-
Nevada	-	-
New Hampshire	-	-
New Jersey	3	-
New Mexico	-	-
New York	7	1
North Carolina	2	-
North Dakota	-	-
Ohio	2	1
Oklahoma	4	-
Oregon	3	-
Pennsylvania	3	1
Puerto Rico*	1	-
Rhode Island	1	-
South Carolina	3	-
South Dakota	-	-
Tennessee	4	-
Texas	2	-
Utah	-	-
Vermont	2	-
Virginia	7	-
Washington	4	-
West Virginia	2	-
Wisconsin	2	-
Wyoming	-	-
Totals:	95	10

Total cost of travel and per diem cost for the five courses conducted in 1976 and 1977: \$26,000.

Average cost of travel and per diem per participant: \$296.

* District of Columbia and Puerto Rico are included as States here.

EXHIBIT 13. RADIOLOGICAL EMERGENCY RESPONSE OPERATIONS COURSE -
STATE AND LOCAL GOVERNMENT PARTICIPATION AND COSTS

State	Government Participants	
	State	Local
Alabama	7	5
Alaska	1	-
Arizona	6	3
Arkansas	-	-
California	2	8
Colorado	10	5
Connecticut	10	1
Delaware	14	4
District of Columbia*	5	-
Florida	9	8
Georgia	13	-
Hawaii	-	-
Idaho	-	1
Illinois	16	-
Indiana	5	2
Iowa	2	10
Kansas	5	-
Kentucky	9	15
Louisiana	8	1
Maine	1	-
Maryland	5	1
Massachusetts	3	-
Michigan	6	-
Minnesota	4	-
Mississippi	5	-
Missouri	6	4
Montana	9	-
Nebraska	-	-
Nevada	1	1
New Hampshire	8	-
New Jersey	6	-
New Mexico	-	-
New York	5	5
North Carolina	20	1
North Dakota	-	-
Ohio	5	-
Oklahoma	-	-
Oregon	12	-
Pennsylvania	1	-
Puerto Rico*	1	-
Rhode Island	5	-
South Carolina	7	3
South Dakota	-	-
Tennessee	10	-
Texas	13	3
Utah	2	-
Vermont	5	-
Virginia	2	3
Washington	15	9
West Virginia	-	-
Wisconsin	4	4
Wyoming	-	-
Totals:	283	97

Total tuition cost for 20 courses from January 1977 through February 9, 1979:	\$500,000.
Total travel and per diem cost for 380 State and local government participants:	\$235,000.
Total costs:	\$735,000.

EXHIBIT 13 (Continued)

Average tuition per student:	\$1250
Average travel and per diem:	\$ 618
Average total cost per student:	\$1868

Note: The several regional State personnel were classified as local government participants.

*District of Columbia and Puerto Rico are included as States.

EXHIBIT 14. UTILITY ASSISTANCE TO STATE AND LOCAL GOVERNMENTS FOR
RADIOLOGICAL EMERGENCY RESPONSE PLANS AND PREPAREDNESS

Example 1. Alabama

The Tennessee Valley Authority and Alabama Power Company have provided many briefings but no training at the State level. Alabama Power Company has conducted some training in hospitals in Houston County. TVA has provided some training in fire, medical and hospital in support of Browns Ferry. TVA assistance to Jackson County (Bellefonte 1 and 2) has been limited to supplying some maps.

Example 2. California

Utilities have not assisted State and local governments in terms of training, resources, or direct funding. Sacramento Municipal Utility District (SMUD) is cooperating with State and local authorities in the development of ARAC at Rancho Seco.

Example 3. Connecticut

Northeast Utilities assisted State and local governments, Tri-Town (Millstone 1 and 2) and Twelve Towns (Haddam Neck), in the development of their plans. Also, training has been conducted for fire department and emergency room personnel. The utility developed the hospital plan.

Example 4. Delaware

Public Service Electric and Gas of New Jersey (Salem 1 and 2) supplied Delaware with two Stabilized Assay Monitors (SAMs) worth \$3,300 each. The utility also arranged for a consultant, Porter and Goertz, to train State personnel.

Example 5. Florida

Florida Power and Light (Turkey Point 3 and 4 and St. Lucie 1 and 2) and Florida Power Corporation (Crystal River 3) assist the State and local governments in training emergency personnel. They have funded the Mobile Emergency Radiological Laboratory (MERL) at \$70,000 on a basis of FPL two parts and FPC one part. Grants are given to the State at \$100,000 per year in support of four positions in Radiation Health for environmental surveillance with the understanding that the four people are available for emergencies at the nuclear power stations.

Example 6. Illinois

Commonwealth Edison has assisted the State in writing the State plan. Some training has been provided. The utility assisted Whiteside and Rock Island Counties in Illinois and Clinton and Scott Counties in Iowa in writing their plans for the Quad Cities 1 and 2 station. Fire and police have received some training in the city of Zion in support of the Zion 1 and 2 station.

Example 7. New Jersey

No training has been conducted by either Public Services Electric and Gas (Salem 1 and 2) nor Jersey Central Power and Light (Oyster Creek) because the State views it as its sole responsibility. PSE&G contributed an unstated part of \$50,000 to communications system consisting of 3 base stations, 1 generator and 24 walkie talkies.

Example 8. New York

Utilities have limited themselves to training associated with drills of fire and ambulance crews with the focus primarily within the fence. Hospital and police personnel have not been trained by utilities. No major resources have been supplied to State and local governments.

EXHIBIT 14 (Continued)

Example 9. Oregon

Portland General Electric (Trojan) contributed \$3,000 initially for the Columbia County plan and \$5,000 as partial contribution to a \$36,000 communications system.

Example 10. Tennessee

Tennessee Valley Authority has given some planning assistance to Hamilton County (Sequoyah 1 and 2). Training has been limited to onsite activities of fire, medical and other emergency personnel.

Example 11. Washington

No training or other types of resources have been supplied to Washington or local governments by utilities.

Example 12. Wisconsin

No training or other types of resources have been supplied to Wisconsin or local governments by utilities.

CHAPTER 5. COST IMPACTS OF THE EMERGENCY PLANNING ZONES CONCEPT

Future cost impacts of the proposed emergency planning zones concept is a central issue of the cost to State and local governments of radiological emergency response plans and preparedness in support of commercial nuclear power stations. Both State and local officials were asked what would be the incremental cost to implement the recommendations of the joint NRC-EPA Task Force report, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants," NUREG-0396 EPA 520/1-78-016, December 1978. Although the document was not quite in its final form at the time, at the visits with officials, the statements made here are essentially independent of this fact. Additional comments that were received as a result of the Federal Register notice related to this report are also incorporated (Ref. 13, 14).

There are two zones. The smaller zone is a single Emergency Planning Zone (EPZ) of about 10 miles in radius and includes whatever low population zone may be already in place. Protective action is primarily targeted at reducing whole body exposure from the plume and from deposited material, and deals primarily with evacuation and sheltering in some combination, although there is also concern about exposure from inhalation and the use of thyroid blocking agents. The larger Emergency Planning Zone (EPZ) is about 50 miles in radius and encompasses the 10-mile EPZ. Protective action is concerned with reducing exposure from ingestion and deals specifically with interdiction of the milk, water and agricultural products pathways. The concept is illustrated in Figure 2.

Cost impacts of implementing the EPZs are considered from the point of view of factors that would tend to increase costs over the current level and factors that would help to limit the incremental costs. There is some attempt to bound the costs at both State and local government levels.

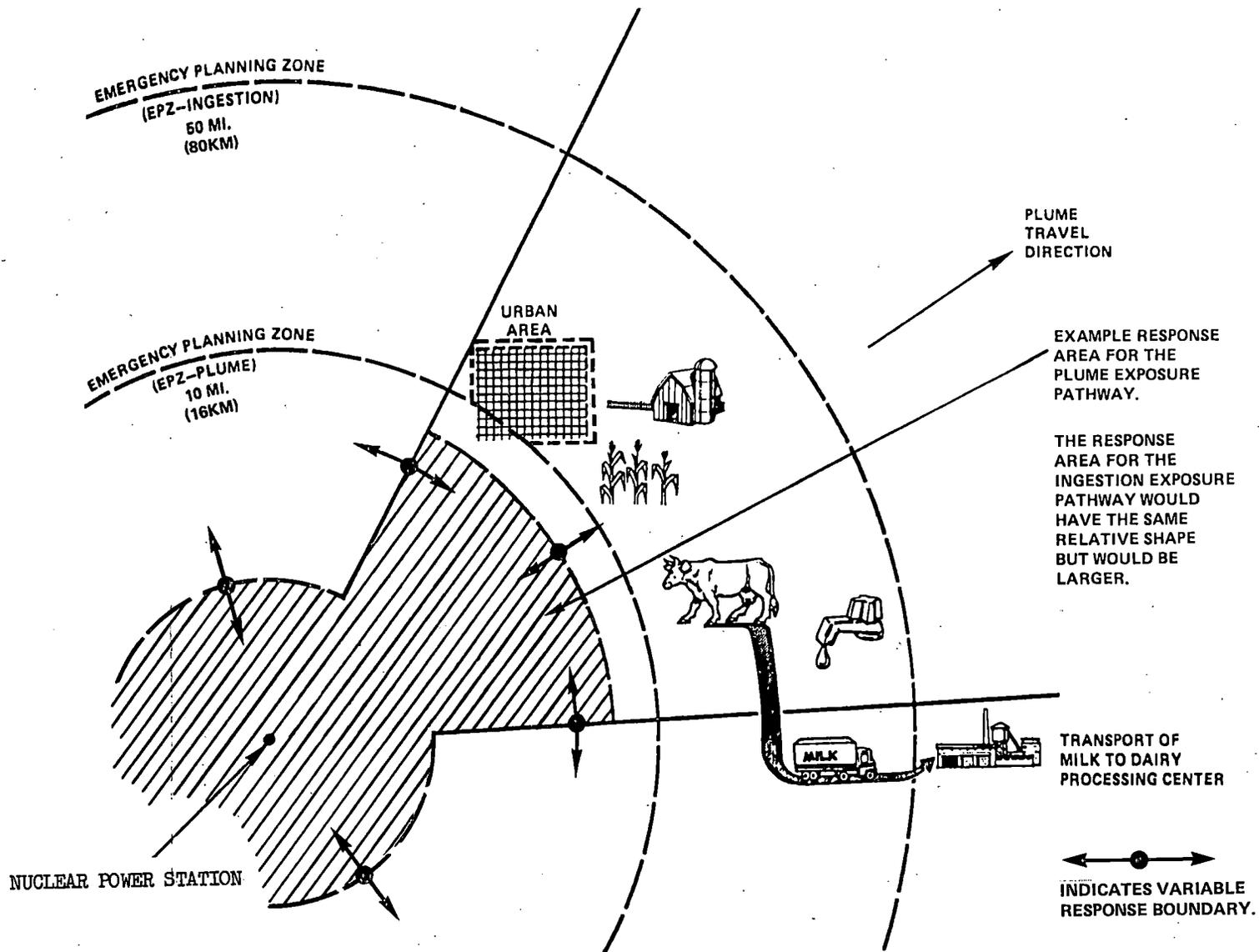
STATE GOVERNMENT

Factors That Increase Cost

There are four major factors that are identified by State emergency personnel with regard to EPZs that would tend to increase the costs of radiological emergency response plans and preparedness over the current level:

- Perceptions,
- Multi-state,
- Personnel, and
- Planning and preparedness.

RECOMMENDED PLANNING BASIS — EMERGENCY PLANNING ZONES —



58-II

FIGURE 2. CONCEPT OF EMERGENCY PLANNING ZONES

The EPZ concept, in the view of a number of State emergency personnel, is another item that indicates that nuclear power is more dangerous than previously thought, and therefore may be enough to prohibit expansion of nuclear power in certain States. State officials envision much time being taken up in public hearings trying to clarify the EPZ concept especially in the context of reduced credibility of certain aspects of the Rasmussen Report (Ref. 15) and the increased uncertainty advanced by the Lewis Report (Ref. 16). Furthermore, there is a belief that the EPZs are not the end. Based on history, some State emergency personnel reluctantly think that in the next few years there may be still larger zones than the 10- and 50-mile EPZs.

Multi-state considerations in planning and preparedness for the 50-mile EPZ especially, and in fewer cases for the 10-mile EPZ, are considerable according to numerous State planners. In fact, for many parts of the country it would appear to make more sense to have regional planning and preparedness with regard to protective action related to ingestion. This is obvious from consulting Figure 3 which shows the high degree of overlapping of 50-mile EPZs. Regions requiring special attention include:

- Most of New England;
- Most of the entire Atlantic seaboard from New York to North Carolina;
- Most of the Carolinas;
- Tennessee Valley Authority system;
- Lower Great Lakes - Ontario, Erie, and Michigan
- Upper Mississippi River valley;
- Lower Mississippi River valley; and
- Columbia River valley.

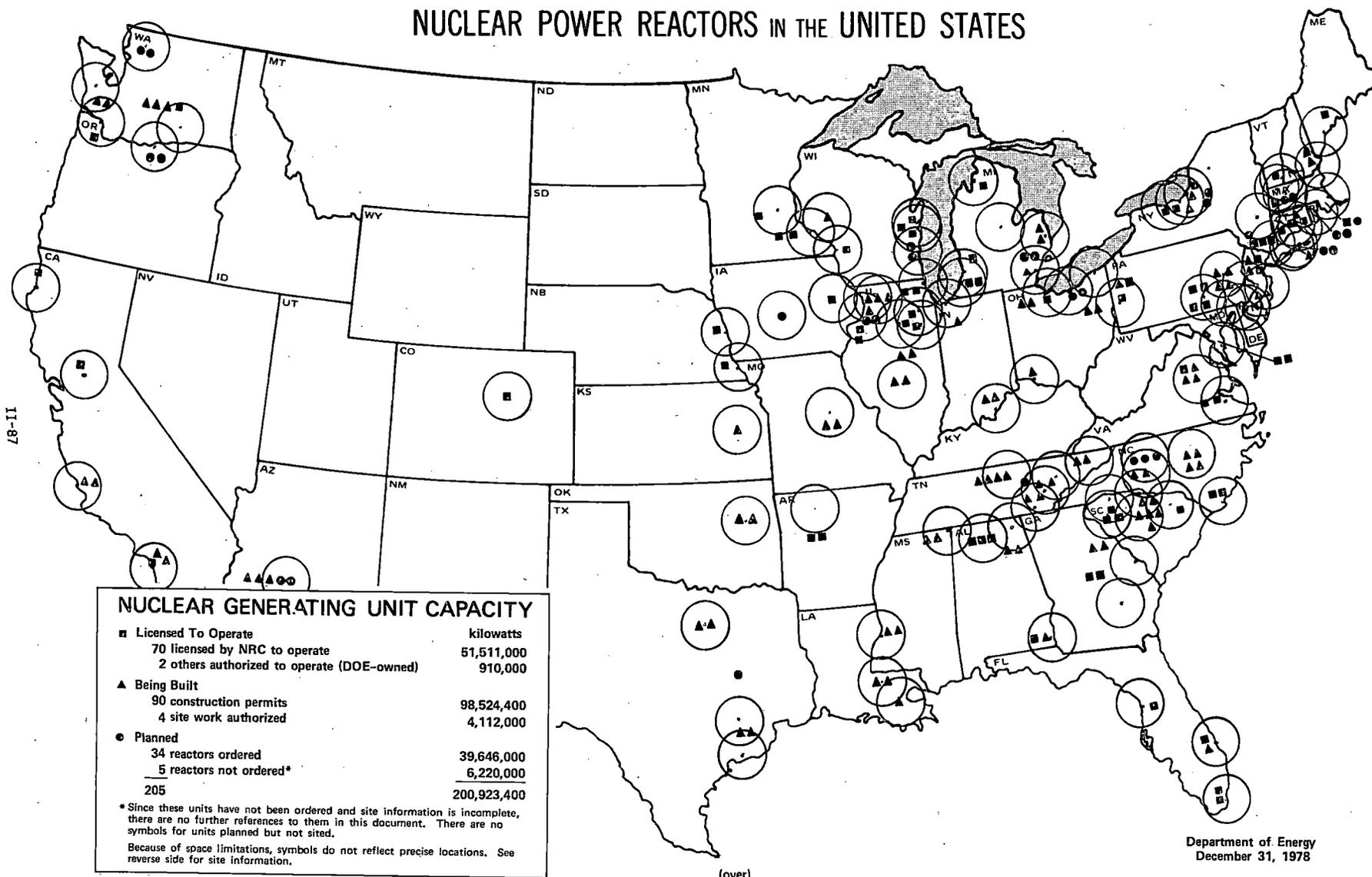
For isolated nuclear power stations, the 50-mile EPZ by itself presents less of a problem with regard to multi-state considerations.

The resulting greater costs would come primarily in additional manpower for planning, more elaborate exercises, and additional training. Substantial additional resources are not envisioned provided that the States within a particular region are adequately equipped under the guidance currently in force, in other words, the State has NRC concurrence.

Personnel impacts is another factor of important consideration especially in the area of agriculture. Here, apparently, trained manpower is limited since the U.S. Department of Agriculture has curtailed its program in civil defense. Therefore, there is resulting diminution of related programs in various States.

State emergency personnel have pointed out that without adequate protective action guides (PAGs) for milk, water and foodstuffs, the health and safety of the population is not protected - even under the NRC guidance as presented in the principal planning and preparedness document, NUREG-75/111. (Note: The U.S. Department of Health, Education, and Welfare - Food and Drug Administration is proposing recommendations for accidental radioactive contamination of human food and animal feeds. Federal Register, Vol. 43, No. 242-Friday, December 15, 1978.) Swift action in this area is strongly encouraged.

NUCLEAR POWER REACTORS IN THE UNITED STATES



11-87

NUCLEAR GENERATING UNIT CAPACITY		
■ Licensed To Operate		kilowatts
70 licensed by NRC to operate		51,511,000
2 others authorized to operate (DOE-owned)		910,000
▲ Being Built		
90 construction permits		98,524,400
4 site work authorized		4,112,000
● Planned		
34 reactors ordered		39,646,000
5 reactors not ordered*		6,220,000
205		200,923,400

* Since these units have not been ordered and site information is incomplete, there are no further references to them in this document. There are no symbols for units planned but not sited.

Because of space limitations, symbols do not reflect precise locations. See reverse side for site information.

USDOE Technical Information Center, Oak Ridge, Tennessee

(over)

Department of Energy
December 31, 1978

FIGURE 3. FIFTY MILE EMERGENCY PLANNING ZONES FOR INGESTION PATHWAY FOR COMMERCIAL NUCLEAR POWER STATIONS

COMMERCIAL NUCLEAR POWER REACTORS IN THE UNITED STATES

STATE	SITE	PLANT NAME	CAPACITY NET MW	UTILITY	COMMERCIAL OPERATION	STATE	SITE	PLANT NAME	CAPACITY NET MW	UTILITY	COMMERCIAL OPERATION	STATE	SITE	PLANT NAME	CAPACITY NET MW	UTILITY	COMMERCIAL OPERATION		
ALABAMA	Decatur	Browns Ferry Nuclear Power Plant: Unit 1	1,005,000	Tennessee Valley Authority	1974	MASSACHUSETTS	Yankee	Yankee Nuclear Power Station	175,000	Yankee Atomic Electric Co.	1961	OKLAHOMA	Black Fox	Black Fox Nuclear Station: Unit 1	1,150,000	Public Service of Oklahoma	1984		
	Decatur	Browns Ferry Nuclear Power Plant: Unit 2	1,005,000	Tennessee Valley Authority	1975		Plymouth	Plymouth Station: Unit 1	655,000	Boston Edison Co.	1972		Black Fox	Black Fox Nuclear Station: Unit 2	1,150,000	Public Service of Oklahoma	1986		
	Decatur	Browns Ferry Nuclear Power Plant: Unit 3	1,005,000	Tennessee Valley Authority	1977		Plymouth	Plymouth Station: Unit 2	1,150,000	Tennessee Valley Authority	1985		Prescott	Trojan Nuclear Plant: Unit 1	1,120,000	Portland General Electric Co.	1976		
	Durban	Joseph M. Farley Nuclear Plant: Unit 1	820,000	Alabama Power Co.	1977		Montague	Montague: Unit 1	1,150,000	Northeast Utilities	Indef.		Arlington	Public Springs Nuclear Plant: Unit 1	1,280,000	Portland General Electric Co.	1987		
	Durban	Joseph M. Farley Nuclear Plant: Unit 2	820,000	Alabama Power Co.	1980		Montague	Montague: Unit 2	1,150,000	Northeast Utilities	Indef.		Arlington	Public Springs Nuclear Plant: Unit 2	1,280,000	Portland General Electric Co.	1989		
	Scottsboro	Bellefonte Nuclear Plant: Unit 1	1,213,000	Tennessee Valley Authority	1981		MICHIGAN	Big Rock Point	Big Rock Point Nuclear Plant	72,000	Consumers Power Co.		1963	PENNSYLVANIA	Peach Bottom	Peach Bottom Atomic Power Station: Unit 2	1,085,000	Philadelphia Electric Co.	1974
	Scottsboro	Bellefonte Nuclear Plant: Unit 2	1,213,000	Tennessee Valley Authority	1982		Palms	Palms Nuclear Power Station	805,000	Consumers Power Co.	1971		Peach Bottom		Peach Bottom Atomic Power Station: Unit 3	1,085,000	Philadelphia Electric Co.	1974	
	ARIZONA	Wintersburg	Palo Verde Nuclear Generating Station: Unit 1	1,270,000	Arizona Public Service		1983	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric		1980		Pottstown	Limerick Generating Station: Unit 1	1,055,000	Philadelphia Electric Co.	1983
		Wintersburg	Palo Verde Nuclear Generating Station: Unit 2	1,270,000	Arizona Public Service		1984	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric		1980		Pottstown	Limerick Generating Station: Unit 2	1,055,000	Philadelphia Electric Co.	1985
		Wintersburg	Palo Verde Nuclear Generating Station: Unit 3	1,270,000	Arizona Public Service		1986	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric		1980		Pottstown	Limerick Generating Station: Unit 3	1,055,000	Philadelphia Electric Co.	1985
Wintersburg		Palo Verde Nuclear Generating Station: Unit 4	1,270,000	Arizona Public Service	1988	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Pottstown	Limerick Generating Station: Unit 4	1,055,000		Philadelphia Electric Co.	1985			
Wintersburg		Palo Verde Nuclear Generating Station: Unit 5	1,270,000	Arizona Public Service	1980	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Pottstown	Limerick Generating Station: Unit 5	1,055,000		Philadelphia Electric Co.	1985			
ARKANSAS	Russville	Arkansas Nuclear One: Unit 1	850,000	Arkansas Power & Light Co.	1974	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000		Department of Energy	1957			
	Russville	Arkansas Nuclear One: Unit 2	812,000	Arkansas Power & Light Co.	1979	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000		Department of Energy	1976			
CALIFORNIA	Eureka	Humboldt Bay Power Plant: Unit 3	63,000	Pacific Gas & Electric Co.	1963	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000		Department of Energy	1976			
	San Clemente	San Onofre Nuclear Generating Station: Unit 1	436,000	So. Calif. Ed. & San Diego Gas & El. Co.	1968	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	San Clemente	San Onofre Nuclear Generating Station: Unit 2	1,101,000	So. Calif. Ed. & San Diego Gas & El. Co.	1981	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	San Clemente	San Onofre Nuclear Generating Station: Unit 3	1,100,000	So. Calif. Ed. & San Diego Gas & El. Co.	1983	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Diablo Canyon	Diablo Canyon Nuclear Power Plant: Unit 1	1,084,000	Pacific Gas & Electric Co.	1979	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Diablo Canyon	Diablo Canyon Nuclear Power Plant: Unit 2	1,065,000	Pacific Gas & Electric Co.	1979	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Clayton	Rancho Seco Nuclear Generating Station: Unit 1	918,000	Sacramento Municipal Utility District	1975	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Clayton	Rancho Seco Nuclear Generating Station: Unit 2	918,000	Pacific Gas & Electric Co.	Indef.	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Clayton	Rancho Seco Nuclear Generating Station: Unit 3	918,000	Pacific Gas & Electric Co.	Indef.	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Clayton	Rancho Seco Nuclear Generating Station: Unit 4	918,000	Pacific Gas & Electric Co.	Indef.	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
COLORADO	Platteville	Ft. St. Vrain Nuclear Generating Station	1,330,000	Public Service Co. of Colorado	1978	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	CONNECTICUT	Haddam Neck	Haddam Neck Plant	575,000	Conn. Yankee Atomic Power Co.	1968	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976			
Windsor		Milstone Nuclear Power Station: Unit 1	860,000	Northeast Nuclear Energy Co.	1975	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
Windsor		Milstone Nuclear Power Station: Unit 2	830,000	Northeast Nuclear Energy Co.	1976	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
Windsor		Milstone Nuclear Power Station: Unit 3	1,156,000	Northeast Nuclear Energy Co.	1986	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
Windsor		Milstone Nuclear Power Station: Unit 4	1,156,000	Northeast Nuclear Energy Co.	1986	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
FLORIDA	Florida City	Turkey Point Station: Unit 3	892,000	Florida Power & Light Co.	1972	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Florida City	Turkey Point Station: Unit 4	892,000	Florida Power & Light Co.	1972	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Red Reef	Crystal River Plant: Unit 3	825,000	Florida Power Corp.	1977	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Fl. P. Piece	St. Lucie Plant: Unit 1	802,000	Florida Power & Light Co.	1976	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Fl. P. Piece	St. Lucie Plant: Unit 2	810,000	Florida Power & Light Co.	1983	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	GEORGIA	Baldwin	Edwin I. Hatch Nuclear Plant: Unit 1	786,000	Georgia Power Co.	1975	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976			
		Baldwin	Edwin I. Hatch Nuclear Plant: Unit 2	795,000	Georgia Power Co.	1978	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976			
		Waynesboro	Alvin W. Vogtle, Jr. Plant: Unit 1	1,110,000	Georgia Power Co.	1984	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976			
		Waynesboro	Alvin W. Vogtle, Jr. Plant: Unit 2	1,110,000	Georgia Power Co.	1987	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976			
		Waynesboro	Alvin W. Vogtle, Jr. Plant: Unit 3	1,110,000	Georgia Power Co.	1987	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976			
ILLINOIS	Morris	Dresden Nuclear Power Station: Unit 1	200,000	Commonwealth Edison Co.	1980	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Morris	Dresden Nuclear Power Station: Unit 2	784,000	Commonwealth Edison Co.	1970	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Morris	Dresden Nuclear Power Station: Unit 3	784,000	Commonwealth Edison Co.	1971	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Zion	Zion Nuclear Plant: Unit 1	1,040,000	Commonwealth Edison Co.	1973	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Zion	Zion Nuclear Plant: Unit 2	1,040,000	Commonwealth Edison Co.	1974	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Cordova	Quad-Cities Station: Unit 1	789,000	Comm. Ed. Co., Ia., Ill. Gas & Elec. Co.	1972	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Cordova	Quad-Cities Station: Unit 2	789,000	Comm. Ed. Co., Ia., Ill. Gas & Elec. Co.	1973	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Seneca	LaSalle County Nuclear Station: Unit 1	1,078,000	Commonwealth Edison Co.	1978	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Seneca	LaSalle County Nuclear Station: Unit 2	1,078,000	Commonwealth Edison Co.	1980	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Byron	Byron Station: Unit 1	1,120,000	Commonwealth Edison Co.	1981	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
Byron	Byron Station: Unit 2	1,120,000	Commonwealth Edison Co.	1982	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976					
INDIANA	Braidwood	Braidwood: Unit 1	1,120,000	Commonwealth Edison Co.	1981	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Braidwood	Braidwood: Unit 2	1,120,000	Commonwealth Edison Co.	1982	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Clinton	Clinton Nuclear Power Plant: Unit 1	933,400	Hilltop Power Co.	1982	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Clinton	Clinton Nuclear Power Plant: Unit 2	933,400	Hilltop Power Co.	1986	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Savannah	Carroll County Station: Unit 1	1,120,000	Commonwealth Edison Co.	1987	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Savannah	Carroll County Station: Unit 2	1,120,000	Commonwealth Edison Co.	1988	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	IOWA	Palo Verde	Bally Generating Station	642,000	Northern Indiana Public Service Co.	1984	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976			
		Medford	Marble Hill Nuclear Power Station: Unit 1	1,130,000	Public Service Indiana	1982	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976			
		Medford	Marble Hill Nuclear Power Station: Unit 2	1,130,000	Public Service Indiana	1984	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976			
		Medford	Marble Hill Nuclear Power Station: Unit 3	1,130,000	Public Service Indiana	1984	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976			
Medford		Marble Hill Nuclear Power Station: Unit 4	1,130,000	Public Service Indiana	1984	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
KANSAS	Duane Arnold Energy Center	Duane Arnold Energy Center: Unit 1	830,000	Iowa Electric Light and Power Co.	1975	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Vandalia	Vandalia Nuclear Project	1,270,000	Iowa Power & Light Co.	Indef.	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
LOUISIANA	Wolf Creek	Wolf Creek Generating Station	1,150,000	Kansas Gas & Electric-Kansas City P&L	1983	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	Waterford	Waterford Generating Station: Unit 3	1,113,000	Louisiana Power & Light Co.	1981	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
MAINE	St. Francisville	River Bend Station: Unit 1	934,000	Gulf States Utilities Co.	1984	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
	St. Francisville	River Bend Station: Unit 2	934,000	Gulf States Utilities Co.	Indef.	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	1980	Shippingsport	Shippingsport Atomic Power Station	83,000	Department of Energy	1976				
MARYLAND	Calvert Cliffs	Calvert Cliffs Nuclear Power Plant	790,000	Maine Yankee Atomic Power Co.	1972	Palms	Palms Nuclear Power Station	1,333,000	Edison Electric	19									

There is concern over the cost impacts of the proposed thyroid-blocking agent, potassium iodide. (Note: HEW-FDA is requesting submissions of new drug applications for potassium iodide as a thyroid-blocking agent in a radiation emergency. Federal Register, Vol. 43. No. 242-Friday, December 15, 1978.) The cost will be small if its use is limited to emergency workers. Although a number of utilities and nuclear industries have stockpiles of potassium iodide or potassium iodate (the kind used in Great Britain), some radiation health personnel, such as from Florida and Oregon, believe that there is no need for it. Emergency workers can wear appropriate masks and the expense for the general public is viewed as too high in light of the perceived risks from nuclear power.

If it is authorized for use by the affected public, States are concerned over purchase costs, administration costs, and other costs that may accrue from legal liabilities. Some indication of the production cost in pill form is given in a 1972 Defense Civil Preparedness Agency sponsored study -- about \$1 million for the entire U.S. (Ref. 17). The Food and Drug Administration employed Malinkrot, Inc. to produce liquid potassium iodide for use at Three Mile Island on an overnight basis at a production cost of 25 cents per dose. The Inter-organizational Advisory Committee (IOAC) recommends that the NRC, or some other appropriate Federal agency, procure and stockpile potassium iodide that is approved by the Food and Drug Administration for use in an emergency. The blocking agent, for example, could be stored at the Federal regional offices which could make it available in rapid fashion in the event of an accident. Some of the blocking agent could be distributed before any emergency to all local jurisdictions immediately adjacent to a nuclear facility that had the potential for releasing quantities of radioiodine.

The views on the incremental costs to States for general plans and preparedness vary depending on their current status. In Florida, for example, plans are not limited to any particular distance. Nonetheless, Florida emergency personnel estimate that their planning costs would be triple due to increased costs in manpower, public notification, information, and education. Exercises are also cited as being more expensive. This is for a State believed by many practitioners to have one of the best programs in the U.S.

A smaller cost factor is international cooperation with Canada, perhaps through the International Joint Commission, which would be required on account of the 50-mile EPZ. Impacted provinces are British Columbia, from Skagit 1 and 2 in Washington, and Ontario from nuclear power stations near Lake Ontario, Lake Erie and Lake Huron. Resulting increased costs would be smaller in scale compared to those of the multi-state factor. If similar zones were adopted by Canada around their nuclear power stations, the U.S. would be impacted also.

Factors That Limit Costs

There are a number of joint State/Federal programs that may help to limit the incremental costs of implementing the EPZs. State emergency personnel identified:

- Risk/host specialists in crisis relocation;
- Milk surveillance from routine emission and weapons fallout;
- Monitoring capability related to Safe Drinking Water Act; and
- Capabilities developing from Federal Toxic Substances Strategy Committee.

The primary function of the crisis relocation specialists from States and FEMA is to plan to evacuate in the event of the threat of nuclear war those people living and working in risk areas to areas considered to be host areas. For peacetime purposes, these specialists could be used for evaluating and planning in areas of the country with unique problems, such as high population, and where the scope of the problem is beyond the capabilities for local planners, or is more of a State-wide problem. Already, FEMA has hired 264 planners for crisis relocation in the States with authorization that they can be used for planning related to nuclear power stations. Some people think that the impact of this manpower resource could be substantial.

Nuclear power stations having cumulative populations in 1970 in excess of 100,000 within 10 miles are candidates for such attention. The eight sites in order of population density are given below with their 1970 and year 2000 population estimates (Ref. 18):

<u>High Population Density Sites</u>	<u>Operating Status</u>	<u>State</u>	<u>Population within 10 miles</u>	
			<u>1970</u>	<u>2000</u>
1. Indian Point	Operating	New York	329,000	444,000
2. Zion	Operating	Illinois	282,000	441,000
3. Limerick	1982	Pennsylvania	281,000	420,000
4. Enrico Fermi	1981	Michigan	185,000	326,000
5. Beaver Valley	Operating	Pennsylvania	154,000	184,000
6. Three Mile Island	Operating*	Pennsylvania	121,000	183,000
7. Millstone	Operating	Connecticut	119,000	170,000
8. Bailey	1983	Indiana	103,000	166,000

*Unit 2 is not operating because of the accident.

The cutoff of 100,000 is used because there is very little experience in evacuating larger number of persons according to an Environmental Protection Agency study on evacuation (Ref. 19). This study describes a number of evacuations that occurred in the U. S. from 1960 to 1974 which were caused by floods, hurricanes, explosions, toxic substances etc., all of which are analagous to some degree with potential hazards posed by a release of radiation. Studies by MITRE and Sandia flag Indian Point and Zion as the sites of highest risk in the event of an accident because of their large populations nearby (Ref. 20). A comprehensive planning strategy could include sheltering and use of thyroid-blocking agents in addition to evacuation and therefore could lower the risk substantially.

A step in this direction is that New York State has developed in draft form a dynamic evacuation analysis out to 3 and 5 miles for Indian Point. The objective of this analysis is to yield theoretical yet practical times for evacuation (Ref. 20a).

The monitoring capability established by EPA to survey dairies for contamination from radio-active fallout, such as the one as being conducted in Delaware, may serve as a basis for building such a capability for the 50-mile EPZ, or for a region. Some States think that this program is too weak to be of much benefit. Nevertheless, this program would supplement whatever capability the State and utility already have for monitoring emissions from nuclear

power stations during normal operations. In fact, Wisconsin proposed that consultants for the utilities would be in the best position to identify sources and present a program for government decisionmaking. The argument in favor of the utility approach is that the work would just be a natural extension of what the utilities are already doing. For example, the extension would be from 20 miles to 50 miles. The State Radiation Health Division would oversee the utility, as is the current case in some of the States.

A number of States, such as New Jersey, are monitoring drinking water for radioactivity in compliance with the Safe Drinking Water Act. Identification of sources and monitoring capability as well as other planning and preparedness spinoffs may tend to limit costs of implementing 50-mile EPZs.

The 17-agency Toxic Substances Strategy Committee (chaired by Council on Environmental Quality and including NRC) has as an objective the development of a plan of action for handling spills and other emergencies involving toxic substances (Ref. 21). Important roles of State and local governments and industry are being given significant attention. Federal measures to support State efforts is under consideration. To what extent this work will help to limit the incremental costs for implementing the EPZs is uncertain.

LOCAL GOVERNMENT

Local government emergency personnel are concerned with the 10-mile EPZ. The general belief is that the State would have the primary role for the 50-mile EPZ in coordinating the various impacted jurisdictions. Local government would play a supporting function with their more limited resources. Therefore, most of the following discussion is related to the 10-mile EPZ.

Factors That Increase Costs

The historical costs for plans is shown in Chapter 3 to be about \$10,000 per jurisdiction. If the expansion from the current zone to the 10-mile EPZ includes another jurisdiction, such as a county or a town of good size, then another \$10,000 must be added. A quadrupling of the area as presented in the example above could easily include some additional jurisdictions.

Generally speaking, preparedness costs associated with the 10-mile EPZ are estimated to be roughly proportional to the area when compared to the zone that is currently used. For example, if the current zone has a radius of 5 miles, the costs for preparedness for the 10-mile EPZ would be expected to be four times greater. More specifically, some of the items highlighted for increased costs are manpower, maps, warning systems, exercises and education programs for the public.

Although the inquiry into costs depends on informed judgment, there are a number of nuclear power stations where the costs are sure to be considerably higher than the level of costs indicated above, and will take detailed examination to better understand the problems and the resultant costs. See, for example, the eight nuclear power stations previously discussed.

As populations grow around the sites, there may eventually be additional 13 sites with populations in excess of 100,000 people within the 10-mile EPZ. The only forecasts available are derived from the year 2000 projections from the 1970 Census of Population, by the Bureau of Census, U.S. Department of Commerce. There is some likelihood that these populations will not be reached on account of declining birth rates. Nonetheless, these sites are flagged as requiring special attention. The projected populations are (Ref. 22):

<u>High Growth Population</u>	<u>Operating Status</u>	<u>State</u>	<u>Population within 10 miles</u>	
			<u>1970</u>	<u>2000</u>
<u>Density Sites</u>				
1. Turkey Point	Operating	Florida	99,000	269,000
2. Seabrook	1983	New Hampshire	99,000	185,000
3. Shoreham	1984	New York	95,000	182,000
4. Oyster Creek	Operating	New Jersey	83,000	164,000
5. Perry	1982	Ohio	94,000	146,000
6. Midland	1980	Michigan	90,000	141,000
7. Duane Arnold	Operating	Iowa	79,000	120,000
8. Haddam Neck	Operating	Connecticut	57,000	117,000
9. St. Lucie	Operating	Florida	47,000	114,000
10. Salem	Operating	New Jersey	78,000	111,000
11. Trojan	Operating	Oregon	71,000	108,000
12. San Onofre	Operating	California	67,000	105,000
13. Catawba	1981	South Carolina	66,000	100,000

Because of the high population densities surrounding Haddam Neck and Millstone, Northeast Utilities (NEU) estimates that implementation of the EPZs could cost from \$500,000 to \$1 million per site for planning alone. Furthermore, NEU believes that maintenance of the plan and preparedness could be well beyond current financial and other resources of the impacted towns that is available for civil preparedness.

Other Factors of Interest

The size of the EPZ involving plume protective action is questioned in terms of the 10-mile radius and its circular nature. For small nuclear power stations, such as the 63 megawatts electric Humboldt Bay nuclear power station, the issue is the reduction from 10 miles to a smaller radius, such as 3 miles, because of the smaller inventory of radioactive materials present in the reactor compared to current 1000 MWe ones. Other small nuclear power stations are Big Rock Point, Michigan and La Crosse, Wisconsin.

Another factor of importance is the shape. For nuclear power stations situated in river valleys with canyon walls, such as Trojan in the Columbia River valley, a cigar-shaped EPZ up and down the river valley would seem to be more reasonable.

Another factor related to small nuclear power stations is the size of the 50-mile EPZ. For example, at Humboldt Bay, local planners believe that a 10-mile radius should be adequate for the milk pathway.

The issue of including a town that lies on the 10-mile EPZ is highlighted by the case of Oswego on Lake Ontario in upstate New York. This town lies about 10 miles from the Nine Mile Point facilities. Local emergency planners are not certain, in cost/benefit terms, that Oswego should be included. Certainty to them means defensible in public hearings.

These cases illustrate the fact that local emergency planners lack the technical expertise to make these decisions. They look forward to additional NRC guidance in such matters. The alternative is to hire technical consultants with a resulting cost burden to local government for planning.

Some additional factors that would increase costs to local governments include:

Extra manpower - Full-time people may be needed for at least a year to implement the 10-mile EPZ;

Credibility - Changing the rules to a 10-mile EPZ just after an LPZ of several miles was instituted, will lead to a reduction in credibility;

Legalities - Emergency plans have legal status and a number of local planners would tend to be overly conservative in order to properly protect themselves unless adequate technical expertise is made available to them;

Jurisdictional - More government entities would be involved with resulting complexities. This is especially true in small States, like in New England, than in larger States in the South and West;

Land use planning - Zoning to inhibit population growth within the 10-mile EPZ is under consideration and may lead to additional local cost burdens.

Status

The Interorganizational Committee (IOAC) recognizes many of the problems, such as the ones illustrated above. Nonetheless, the IOAC recommends that the concept of Emergency Planning Zones as described in this chapter be implemented as soon as possible to provide needed improvements in most radiological emergency response plans. Already, at least Arkansas, Georgia, Kentucky, Oregon, and Washington endorse the 10-mile and 50-mile EPZs. The Tennessee Valley Authority intends to incorporate the 10-mile EPZ into its emergency planning effort. The GAO recommends the 10-mile EPZ. The NRC Siting Policy Task Force included provisions for a 10-mile EPZ in siting decision making. The NRC-EPA Task Force recommendation was approved by the Commission in October 1979. The EPA Administrator is considering approval.

MODEL COSTS

In this section, the following estimates attempt to place upper bounds to the costs at both State and local government levels and is based on the preceding discussion for Emergency Planning Zones:

A typical State might incur the following costs:

Plan

Initial	\$100,000
Update	\$ 10,000 per year

Preparedness

- Exercises \$ 20,000 per year
- Training
 - Initial \$ 20,000
 - Update \$ 4,000 per year
- Resources
 - Initial \$100,000
 - Update \$ 10,000 per year

Typically, local government has four jurisdictions involved. This is ascertained from examining a map with 10-mile circles drawn around the sites described in this inquiry. On this basis, local government might incur the following costs:

Plan

Initial (4 jurisdictions)	\$40,000 @ \$10,000 per jurisdiction
Update	\$ 4,000 per year

Preparedness

- Exercises \$20,000 per year
- Training none
- Resources
 - Initial (primarily for communications) \$60,000
 - Update \$ 6,000 per year

The above estimated costs do not include all of the costs associated with the eight sites discussed above that require special attention, nor the 13 additional ones that may require special attention.

A simplified national model is developed along the same lines as shown in Chapter 4. The details are worked out in Appendix C. Based on the above, for a typical State, the initial costs for the plan, exercise, training and resources total \$240,000. Annual updating costs total \$44,000. For all 40 States, from 1980-2000, the national present value cost to State governments is \$24 million.

At the local government level, for a typical site, initial costs for the plan, exercise, training and resources total \$120,000. Annual updating costs total \$30,000. For all 101 sites, the national present value cost to local governments is \$32 million. The combined

national present value cost to State and local governments is \$56 million. The incremental present value cost to State and local governments for implementing the EPZs, assuming all States and local governments are already concurred, is \$24 million.

The addition of the Atmospheric Release Advisory Capability (ARAC) or the ring system can considerably enhance plans and preparedness for State and local governments as described in Chapter 4. This enhancement is especially important for the EPZ concept. As shown in Appendix C, the national present value cost to State and local governments for ARAC or ring systems is \$16 million. Therefore, the total present value cost to State and local governments for the enhanced system is \$72 million.

The 21 high population (and growth) density sites present difficulties in estimation of the costs for plans and preparedness. An additional present value cost of \$500,000 per site for the 8 high population density sites and \$250,000 per site for the 13 high growth population density sites is a rough estimate that should purchase considerable extra plans and preparedness required by the nature of the large populations within the 10-mile EPZ. On this basis, the total present value cost is about \$8 million for the 21 high population (and growth) density sites.

Local civil defense/emergency services directors and their limited staff would find the tasks of plans and preparedness for the EPZs very burdensome. Therefore, there should be a local technical director designated for local radiological emergency response plans and preparedness who would receive training in all the NRC-sponsored courses. Consideration should be given to have the technical director under State civil service merit system. A salary range of \$10,000 to \$20,000 per year (Ref. 22a) should be adequate except in high living expense areas where a more suitable salary would be \$30,000 per year. The national present value cost for 101 local technical directors is \$8 million to \$16 million for the time period 1980-2000. Assuming a salary of \$30,000 and two directors for each of the eight high population density sites, the present value cost would be increased by nearly \$3 million to a total of about \$20 million.

When the \$100 million present value cost for all plans and preparedness is allocated to a site, as shown in Chapter 8, the cost is \$1 million. The cost of plans and preparedness is 0.0011 ¢ per kilowatt-hour (kWh) for a 2-unit, 1,000 megawatt electric station, assuming a capacity factor of 0.6. The average cost of plans and preparedness per residential customer is about 1¢ per month. For comparison, the average monthly residential bill was about \$33 for 730 kWh in 1978.

CHAPTER 6. FUNDING STATE GOVERNMENTS

For all emergencies, the State's role is to develop and maintain a comprehensive program of emergency management that supplements those of the facilities and provides leadership when needed to local efforts before, during and after emergencies. Accordingly, a comprehensive historical review of the funding of State governments for radiological emergency response plans and preparedness in support of commercial nuclear power stations should include numerous State agencies. However, the following discussion will primarily focus on the lead and principal supporting agency in plans and preparedness. These are the State Civil Defense/Emergency Services and the State Divisions of Radiation Health. In two States, Maine and Michigan, planning is the responsibility of the State Police.

CIVIL DEFENSE/EMERGENCY SERVICES

In general, Civil Defense/Emergency Services departments are funded partly through general appropriations from State government and partly through Federal funding from the Federal Emergency Management Agency (FEMA) formerly DCPA. The funding level of DCPA to the States is discussed in Chapter 2.

All States indicate some funding from DCPA in both radiological emergency response planning and preparedness in support of commercial nuclear power stations. Washington reported that both State and local plans were funded almost entirely by DCPA. In addition, the first exercise involving Trojan in 1975 was funded to a high level by DCPA's Civil Preparedness Instruction Program (CPIP) which was discontinued in 1978.

On a regional basis, DCPA has fluctuated between funding only war-caused emergency planning and allowing certain peacetime emergency planning in conjunction with war emergencies. Indirectly, the radiological defense instruments provided and maintained by DCPA are a source of radiation detection instruments for use in radiological preparedness for accidents at nuclear power stations. In addition, through the Radiological Defense Officer courses and the Peacetime Radiation Incident Training (PRIT), valuable training has been provided at the State and local levels by DCPA. Preparedness resources, such as warning and communications systems, shelters and emergency operating centers have been funded wholly by DCPA or jointly with State government. These resources add to the overall strength of States to respond to an emergency involving a commercial nuclear power station.

Another source of funding that has played a less direct role in this regard are grants from the Federal Disaster Assistance Administration (FDAA, now FEMA), (PL 93-288) for peacetime man-made and natural disasters (see Chapter 2). In general, these funds are used to develop and maintain peacetime emergency plans, provisions of which would be implemented if a nuclear power station accident escalated into a major disaster. Since the accident at Three Mile Island, FEMA has allowed any surplus planning funds to be used for plans in support of nuclear power stations. Generally, the amounts are small.

Although not considered as funding, utility assistance in a few cases has helped to aid in planning. Apparently, Northeast Utilities is the only utility that has helped a State government in their plan to a significant extent - after being urged strongly by Governor Grasso. Most States have specifically not asked for heavy utility assistance to remain as independent as possible from the utility. As viewed by many citizens in most States, independence helps to make the States more credible regulators for the most part.

NRC sponsored training and review of plans and preparedness as discussed in earlier chapters also helps the States in lieu of funding.

RADIATION HEALTH

Radiation health divisions are principally funded by State governments (Ref. 23). In fiscal year 1977, State funds constituted \$10.5 million or about 81 percent of total expenditures for all State and local radiological health activities. Federal funding was limited to \$1.6 million, or about 12 percent of the total expenditures. The remaining \$0.8 million, or 7 percent, came principally from fees.

Generally, radiological emergency response plans and preparedness activities are funded by means of general appropriations from the States. In Florida, there is a contract of \$100,000 per year between the State and the two utilities, Florida Power and Light Company and Florida Power Corporation, to do primarily environmental surveillance but also to support radiological emergency response plans and preparedness activities. Apparently, Florida is the only State with this type of arrangement. There are limited number of instances where utilities supplied radiation health divisions with some equipment in lieu of funding (see Exhibit 14).

NRC sponsored training and review of plans and preparedness helps the State divisions of radiation health in lieu of funding.

PRIORITY SETTING

Emergency personnel in Civil Defense/Emergency Services, Divisions of Radiation Health and other State agencies are very much concerned with priority setting. That is to say, how much money should be allocated for radiological emergency response plans and preparedness in support of commercial nuclear power stations and how quickly should the job be completed compared to the wide range of other activities in which the public's health, safety and welfare has to be protected? Some indication of this range is shown in Table 3. Radiation incidents of any kind comprise only 7 percent of the 1242 natural and man-made events for the period January to June 1978. Not included in Table 3 is the basic wartime civil defense effort, nor included are the efforts of the Divisions of Radiation Health in environmental surveillance, X-ray survey and control, regulation of radioactive materials and non-ionizing radiation, and other programs.

Some States have attempted to use the innovative zero-base budgeting (ZBB) technique to try to establish funding priorities. Based on the inquiry, only Oregon Radiation Health has

TABLE 3. EMERGENCY INCIDENCE TRENDS*

<u>Natural Events</u>	<u>1973-1977</u>	<u>1978</u> <u>(Jan.-June)</u>
Wind	633	130
Flood	313	124
Rural fire	50	17
Snow and ice	86	68
Drought	69	77
Land movement	19	6
Range infestation	--	1
	<u>1170</u>	<u>423</u>
 <u>Man-Made Events</u>		
Urban fires	75	38
<u>Radiation</u>	102	87
Utilities failures	70	36
Pollution, Epidemics	37	51
Terrorism, Civil Disorders	7	25
Hazardous train derailments	--	269
Hazardous materials accidents	--	281
Explosions	--	19
Air crashes	--	7
Oil spills	--	3
Coal shortage	--	3
	<u>291</u>	<u>891</u>
Total:	1461	1242

SOURCE: "1978 Emergency Preparedness Project, Final Report,"
National Governors' Association, Washington, D.C.,
December 31, 1978, p. 10.

*As reported by State Emergency Offices.

been moderately successful in using a modification of ZBB to keep their emergency response capability funded at a skeleton level - \$21,000 annually for the next two fiscal years.

Other States have used more traditional budget procedures. Of course, all are subject to political pressures. These are usually generated at the time of an accident. Since radiological emergency response in support of commercial nuclear power stations is based to a great extent on overall response strength, those States which are subject to events, such as hurricanes, tornadoes, snow storms, or hazardous spills, will have a greater capability than would otherwise be the case. Therefore, for example, Florida Division of Disaster Preparedness is having difficulty in maintaining its overall strength since the mid-sixties because of a lack of hurricanes. The impact of Hurricane David in September 1979 may change the funding situation. Most States are having difficulty in terms of decreasing funding for manpower and resources since the Cuban missile crisis in 1962.

During the last few years, funding is flattening out for both Civil Defense/Emergency Services and Radiation Health. As a consequence, most States report that they are strapped for funds, yet are having to fulfill more requirements. These strong funding trends and political facts of life are important factors to take into consideration in future proposals.

RECOMMENDATIONS OF THE INTERORGANIZATIONAL ADVISORY COMMITTEE

Over the past several years, the Interorganizational Advisory Committee (IOAC) has made a number of Federal funding recommendations. They include the following:

- Funds for the initial staff training and the development publication of State and local radiological emergency response plans;
- Funds for Federal assistance to State and local governments in support of radiological emergency response plans;
- Funds for providing specific and unique resources not normally available to State and local governments;
- Funds for training personnel as identified by the Radiological Emergency Response Plan of the particular State; and
- Funds for assisting State and local governments in the testing and exercise of the Radiological Emergency Response Plan of the particular State.

Because of inadequate funding for most of the items cited, current plans and preparedness for most sites and States are inadequate.

CHAPTER 7. FUNDING LOCAL GOVERNMENTS

Local governments are recognized by the States as having the first line of official public responsibility to prepare for and to respond to most emergencies. Nevertheless, many local governments, but not all, are finding themselves in a funding squeeze similar to or greater than State governments. Local governments also enjoy a wide range of autonomy in running their local affairs, and for that reason a discussion of funding at the local government level is essential.

As in the case of States, a comprehensive historical review of the funding of local governments for radiological emergency response plans and preparedness in support of commercial nuclear power stations should include numerous agencies. The following discussion will focus primarily on the lead agency, which is generally Civil Defense/Emergency Services. There are basically three central issues:

- The assurance of adequate funds to the local Civil Defense/Emergency Services in the jurisdiction that is hosting the nuclear power station and receiving taxes, or the equivalent, from the operating utility.
- The assurance of adequate funds to local Civil Defense/Emergency Services in jurisdictions neighboring the host jurisdiction that are not receiving taxes, or the equivalent, from the operating utility.
- The assurance of continuity over time of adequate funds to the local Civil Defense/Emergency Services of all impacted jurisdictions.

CIVIL DEFENSE/EMERGENCY SERVICES.

Some funding data for local Civil Defense/Emergency Services relevant to radioactive emergency response plans and preparedness in support of commercial nuclear power stations is given in Exhibits 15, 16 and 17. The breakdown is similar to that used for previous cost data. Exhibit 15 highlights operating stations having sites with one-State planning whereas Exhibit 16 summarizes funding data for sites with two-State planning. Finally, Exhibit 17 highlights stations that are under construction.

In general, current staffing is small, usually with a director and one or two staff members and sometimes an additional secretary. Many times a staff person is officially listed as a secretary but is quite versatile with communications and other equipment so is listed here as staff if that seems to be the case. Out of the 24 examples studied, there are five cases where a full-time director is lacking. These include Twelve Towns (Haddam Neck) - Connecticut; Tri-Town (Millstone), Connecticut; New Castle County (Salem), Delaware;

San Luis Obispo County (Diablo Canyon), California; and Rhea and Meigs Counties (Watts Bar), Tennessee. Kewaunee County (Kewaunee), Wisconsin filled the position since the field visit in 1978.

For most of the five, inadequate funding appears to be the reason that there are not any full time directors. For the case of Tri-Town, according to the First Selectman, the Waterford citizens will not support the concept of a full time director for political patronage reasons since they believe that there is no need for one. This means the people believe that the First Selectman will be putting a friend or relative on the payroll for a do-nothing job. For San Luis Obispo County, the problem is to find a new director. Trying to find a local civil defense/emergency services director to coordinate planning is a problem that is difficult to overcome and may require Federal incentives of some kind that are more effective than they have been in the past.

The local Civil Defense/Emergency Services that appear to be having difficulty in obtaining funding to set up or stay functioning are Twelve Towns (Haddam Neck), Connecticut; Westchester County (Indian Point), New York; Jackson County (Bellefonte), Alabama; and Rhea and Meigs Counties (Watts Bar), Tennessee.

The reasons for the lack of funding vary. Twelve Towns suffers from disorganization. Westchester County is being swept over by the overall New York City financial crunch resulting in budget ceilings and lay offs (even the communicable disease and VD programs are being eliminated). Jackson County and Rhea and Meigs Counties lack adequate political power to present budget requests to compete for the very limited financial resources available.

On the other extreme, Lower Alloways Creek Township in Salem County, New Jersey is adequately funded primarily because of a budget surplus of \$16 million. This surplus has accumulated as a result of taxes on the construction of the Salem and Hope Creek nuclear power stations (Ref. 24).

In general, most local Civil Defense/Emergency Services have received DCPA, now FEMA, Personnel and Administrative (P&A) funds at about the 50 percent matching level. In addition, other DCPA matching funds have been received. There is some indication that FEMA P&A funds are becoming more difficult to obtain because of the great competition for them. Also, because of elaborate paperwork requirements Ocean County (Oyster Creek), New Jersey has refused to participate. Twelve Towns has not applied for them at all. Under current FEMA requirements, P&A funds must be matched. As a consequence, if the local government does not put up local dollars, then no Federal money is available.

A comparison of the budgets for local Civil Defense/Emergency Services with the city/county budgets where the data are available indicate that the former budgets are very small, only a fraction of one percent. Nevertheless, there are a number of jurisdictions that continually have to justify their very existence to budget managers, such as county commissioners.

PRIORITY SETTING

Local governments face the same problems as State and Federal governments with regard to setting priorities. Zero-base budgeting and other budget techniques seem to be ineffective compared to classical political pressure in assuring that appropriate amounts of money are allocated to whatever job has to be accomplished. In particular, the budgets of local Civil Defense/Emergency Services will be maintained provided that county commissioners are reminded, for example, how many people were rescued from snow storms last year, or saved from tornadoes. Civil defense activities related to nuclear attack are held in low esteem by many local communities and therefore make it difficult for the director to present a case for much local money. The fact that the Federal and State governments have civil defense/emergency services programs enhances the chances for having local monies, especially when they are matched by FEMA. A number of local officials have stated that a detracting statement regarding civil defense by the Secretary of Defense, especially around budget time, does little to bolster morale and the local civil defense budget. How the Three Mile Island accident will affect local budget priorities is an open question.

When it comes around to reviewing funds for radiological emergency plans and preparedness in support of commercial nuclear power stations, county commissioners and other budget managers have difficulty wrestling with such a low probability for a serious event. An example is the meltdown probability quoted in NUREG-0396 which is from the Rasmussen Report - one chance in 20,000 per year. It seems that probabilities down to about one in one hundred can be understood. Below that, budget managers are faced with murky ill-defined complexities.

For these reasons, the all risk concept is now being advanced. From this point of view, all the events of varying low probability are lumped together. From the perspective of local civil defense/emergency services, these can be myriad. An illustration is a list of 28 items from Cowlitz County, Washington which is shown in Exhibit 18. Of the 28 items, note that an accident from a nuclear power station is listed as 26th, even though the list does not offer priority attention. As a result of this all-risk approach, it is easier to convince local budget managers of the necessity of a program. However, it still remains difficult to convince them how much funding should be appropriated to strictly nuclear-accident-related plans and preparedness within the context of the very limited budget of local Civil Defense/Emergency Services.

UTILITY TAXES

In general, the nuclear power stations contribute a great deal of money to the local governments, directly by means of taxes paid to various jurisdictions, or indirectly by means of taxed salaries spent and businesses that depend on the existence of the station itself. Some indication of the taxes that flow into the public sector of the impacted jurisdictions is summarized in Exhibit 19.

There are three basic categories which are best divided by ownership: (1) private, or investor owned utilities; (2) municipal, or publicly owned utilities; and (3) Federally owned utilities, namely TVA.

Private Utilities

The privately owned utilities typically pay several million dollars per year in property tax to the host jurisdiction. None of these taxes are paid to neighboring jurisdictions, although they may be equally impacted in terms of radiological emergency response plans and preparedness. In Wisconsin, since 1972, taxes on nuclear power stations go to the State, with the State in turn redistributing some monies back to the local communities according to a formula. The objective is to avoid the large budget surpluses that accumulated in the past. Now these same tax dollars go into the general fund and are able to provide more services to the cities. A local community can get no more than \$600,000 per year, as in the case of Kewaunee County (Kewaunee). In time, as the nuclear power station depreciates, the amount received decreases as well. Payments are now \$300,000 for Manitowoc County (Point Beach). Eventually, payments will decrease to zero although there is a coalition of communities trying to establish a minimum payment of about \$100,000 per year in order to cover the costs of various impacts near the end of the life of the power station. They are the same group that opposed the redistribution in the first place - a grab from the "state of Milwaukee," as viewed from the perspective of the communities.

Pennsylvania is the only other State where taxes of private utilities go to the State and are redistributed back to the local communities. Since 1970, redistribution of the revenues is based on the overall tax effort of the local area so that the great bulk of the tax revenue is distributed to the metropolitan communities with their large population and economic base. An example is Peachbottom Township, the site of Peachbottom 1 and 2. (Not shown in Exhibit 19.) In 1976, only \$645 was received. In contrast, Philadelphia (city and county) received \$4.3 million and the Philadelphia school district \$1.8 million. Many local communities believe that this redistribution is inequitable.

Property taxes from nuclear power stations have become sizeable portions of local government tax revenue for host jurisdictions. Some examples are Waterford (Millstone), 78%; Lacey Township (Oyster Creek and Forked River), about 50%; Lower Alloways Creek (Salem and Hope Creek), 93%; and Columbia County (Trojan), 35%.

These communities have used the tax revenue principally to build multi-million dollar schools and to substantially lower the property tax burden on residents. Some other projects that are worthy of note are a multi-million dollar swimming pool and ice arena in Zion Township (Zion); \$500,000 municipal building; \$125,000 recreation field; \$550,000 ski lodge in Lower Alloways Creek; \$75,000 for a new roof on the Salem County Courthouse; \$1 million for two hospitals; and funds to pay 80 percent of the cost of a special education program for handicapped youngsters in the township and three surrounding municipalities (Ref. 25).

The \$16 million budget surplus that has accumulated in Lower Alloways Creek is viewed by Township officials as a disaster insurance pool that would be used to reimburse residents for property damage that might be caused by Salem or Hope Creek and not covered by the insurance carried by the utilities. It should be noted that Governor Byrne has suggested that some of the utility tax revenues be funneled away from Lower Alloways Creek and other similar towns to meet urban problems in New Jersey.

In none of the 24 examples reviewed are tax monies from utilities specifically earmarked for local Civil Defense/Emergency Services purposes in spite of the large sums involved. A similar statement can be made for impacted neighboring jurisdictions that do not benefit directly from tax revenues but still may benefit indirectly from revenues generated by wages spent and business transactions.

Municipal or Publicly Owned Utilities

Municipal or publicly owned utilities have as one of its benefits lower electric rates to consumers since no taxes are paid. Nevertheless, host and adjacent impacted jurisdictions may also benefit indirectly from taxes on wages and business transactions. In some cases, payments in lieu of taxes or impact mitigation payments are made.

For example, the Power Authority of the State of New York (PASNY) is making payments in lieu of taxes to Westchester County - \$1.2 million for 1978. Presumably PASNY is taking over the former tax burden of Consolidated Edison for Indian Point 3. Within 10 years, payments should be phased out completely. Also, the Washington Public Power Supply System (WPPSS) is making various tax and impact mitigation payments amounting to millions of dollars to the State, Benton County and various cities and school districts within the County. (See Exhibit 19 for details.)

For all the examples reviewed, no funds were earmarked for local Civil Defense/Emergency Services activities for any jurisdiction.

Federally Owned Utilities - TVA

TVA makes payments in lieu of taxes on its power properties and operations even though it is not subject to taxation in the usual sense by State or local governments.

Direct payments by TVA to impacted counties have been small in general, less than \$10,000 per year for Morgan, Lawrence and Limestone Counties (Browns Ferry) and Rhea and Meigs Counties (Watts Bar). Hamilton County has received somewhat more - about \$38,000. These direct payments are constant since they are based on TVA purchased power properties when they were privately owned, usually back in the late 1930's. No adjustment for inflation is made.

The States receive direct payments also. They are based on 5 percent of TVA gross revenues from the sale of power, excluding revenue from power sold to Federal agencies. For example, Alabama received \$19.2 million and Tennessee received \$48.9 million in FY 1978. Alabama does not redistribute these payments to the counties, Tennessee does. For example, Rhea and Meigs Counties (Watts Bar) received about \$124,000 and \$56,000, respectively, in FY 1978.

Both Alabama and Tennessee recently enacted legislation to redistribute the TVA direct payments to the States. The Alabama legislation, which becomes effective in 1979, will start to distribute 20 percent of the direct payment to the 19 counties having TVA property.

By 1985, 75 percent will be distributed to the 19 property counties in northern Alabama and 5 percent to counties in southern Alabama. The State will retain 20 percent. One outstanding issue that needs resolution is the computation of fair market value of TVA property. These computations are not currently made by TVA.

The Tennessee legislation will distribute direct payments over the FY 1978 level of about \$50 million. The formula for distribution is 47-1/2 percent to cities and counties, 47-1/2 percent to Tennessee and 5 percent is unallocated. The latter is to be used to create a special mitigation fund. The focus is for front end mitigation, especially preceding and during construction activities. The redistribution formula contains 36 different factors. Direct payments for FY 79 are forecast to be about \$62 million. Counties should receive \$3.78 million and cities \$349,000.

As far as can be determined, none of the TVA direct or redistributed payments in lieu of taxes will be earmarked for State or local Civil Defense/Emergency Services purposes.

TVA has committed themselves to fund \$18 to 20 million in socioeconomic impact mitigation for the impacted jurisdictions of the Hartsville, Yellow Creek and Phipps Bend nuclear power stations. TVA has or will also provide impact mitigation for other sites. For example, \$600,000 has been allocated to Meigs County for roads, local services, fire, police and the like. There has been another \$200 to 300 thousand for education. Rhea County is still under study. However, these funds do not include anything for assistance to local Civil Defense/ Emergency Preparedness. Nevertheless, there is under consideration separate funding for radiological emergency response plans and preparedness at all nuclear power stations. TVA policy in this area is not yet fully developed. It seems to be clear to TVA, however, that the two types of funding should be kept separate.

In the aftermath of the Three Mile Island accident, TVA is implementing major improvements in nuclear safety. Announced on June 2, 1979, TVA will (Ref. 26):

- Work with the States to expand the 3-mile radius to include a contingency plan describing the actions and resources necessary to evacuate or provide shelter for persons living within a 10-mile radius of the plant, and assist Alabama, Mississippi, and Tennessee in developing these plans; and
- Provide a full-time employee to the State of Tennessee, through its Division of Occupational Health and Safety, to assist in planning, development, and maintenance of radiological emergency plans. Through its program of technological assistance to public agencies, TVA's Office of Community Development will also provide technical and, as appropriate, financial assistance to local agencies. This assistance will be used to develop or improve emergency warning systems, emergency operating centers, training of emergency personnel, and emergency and disaster response equipment. Such assistance will be useful both for response to nuclear emergencies and natural disasters.

SOME MAJOR FINDINGS

- For the majority of jurisdictions, there appears to be adequate tax revenues generated from a nuclear power station in the host jurisdiction. Budget managers prefer to allocate most funds to other projects perceived to have higher priority than local radiological emergency response plans and preparedness. The consequence is that local Civil Defense/Emergency Services are not always completely funded for planning and preparedness.
- The assurance of adequate funds to local Civil Defense/Emergency Services for radiological emergency response plans and preparedness for neighboring impacted jurisdictions is considerably less secure. In security prevails even though some tax benefit is derived indirectly by means of taxes on wages spent and business transactions that result from the construction and operation of a nuclear power station. As in the case of the host jurisdiction, the main problem is the setting of priorities.
- The assurance of continuity in funding local Civil Defense/Emergency Services for plans and preparedness is open to question because in the long run, over a number of years, tax revenues and indirect sources of public funds derived directly or indirectly from the nuclear power station may begin to decline. As a consequence, local budgets would become stretched and radiological emergency response plans and preparedness may suffer an even lower priority than they currently enjoy.

EXHIBIT 15. FUNDING DATA FOR LOCAL CIVIL DEFENSE/EMERGENCY SERVICES RELEVANT TO RADIOLOGICAL EMERGENCY RESPONSE PLANS AND PREPAREDNESS IN SUPPORT OF OPERATING NUCLEAR POWER STATIONS

Sites with One-State Planning

Example 1. Browns Ferry 1,2 and 3 - Alabama - Morgan, Lawrence and Limestone Counties

Morgan County. Current staff: Director plus 2 staff. Decatur-Morgan County Civil Defense budget for FY 1979: \$71,000. Funding formula: Decatur-25%, Morgan County-25%, DCPA-50%. In fact, DCPA has contributed only 25% so that Morgan County is paying 50%. Morgan County budget for FY 1979: \$5,579,000. Discretionary part is quite small.

Lawrence and Limestone Counties. Both have CD directors. No funding data collected.

Example 2. Humboldt Bay - California - Humboldt County

Current staff: Director plus staff. Budget for FY 1979: \$72,200. Funding formula: Humboldt County - 58%, DCPA-42%.

Example 3. Rancho Seco 1 - California - Sacramento County

Current staff: Director plus staff. Budget for FY 1979: Sacramento County-60%, DCPA-40%.

Example 4. San Onofre 1 - California - Orange and San Diego Counties

County of Orange. Current staff: Director plus staff. Funding formula: Orange County general appropriations and DCPA Personnel and Administrative funds that are applicable only to nuclear war planning - not to PRIT and plans activity.

Unified San Diego County. Current staff: Director plus staff. Funding formula: San Diego County-25%, 14 member cities-25%, DCPA-50%.

Example 5. Haddam Neck (Connecticut Yankee) - Connecticut - Twelve Towns

Current staff: Towns have only part time or volunteer directors and staff. Budget: No data available. Towns are not receiving DCPA Personnel and Administrative funds because towns have not applied for them.

Example 6. Millstone 1 and 2 - Connecticut - Tri-town

Waterford has a part time Civil Preparedness director. New London and East Lyme do not have directors. Waterford citizens will not support the concept of a full time director for political patronage reasons since they believe that there is no need for one. Waterford budget for FY 1978: \$3,000.

Example 7. Crystal River 3 - Florida - Citrus and Levy Counties

Citrus County. Current staff: Director plus one staff. Budget for FY 1978: \$28,664. DPCA P&A contribution: \$6,493. Citrus County budget for FY 1978: \$12 million of which \$6 million is for school.

Levy County. No CD director. Citrus County covers for Levy County through mutual aid pact.

Example 8. St. Lucie 1 - Florida - St. Lucie and Martin Counties

St. Lucie County. Current staff: Director. Budget for FY 1978: \$14,000. Funding formula: St. Lucie County 50%, DCPA P&A about 50%. St. Lucie County budget: \$7.5 million.

Martin County. Current staff: Director plus one staff. Budget for FY 1978: \$38,000. Funding formula: Martin County budget for FY 1978: \$4.5 million.

EXHIBIT 15 (Continued)

Example 9. Turkey Point 3 and 4 - Florida - Dade County

Current staff: Director plus 4 professionals and 2 clerical. Budget for FY 1979: \$200,000. Funding formula: Dade County-55%, DCPA P&A, 45%.

Example 10. Oyster Creek - New Jersey - Ocean County

Current staff: Director plus 3 full time staff and one half-time person. Budget: not available. DCPA P&A funds not applied for because it takes too much time to do the necessary Federal paperwork.

Example 11. FitzPatrick and Nine Mile Point 1 - New York Oswego County

Current staff: Director plus 2 staff. Budget for CY 1978: \$45,455; for CY 1979: \$60,000. Funding formula: Oswego County-15%, Oswego City-20%, Fulton-15%, DCPA-50%. DCPA money is limited to nuclear attack preparations.

Example 12. Indian Point 2 and 3 - New York - Westchester, Rockland, and Putnam Counties

Westchester County. Current staff: Director and 3 staff. Reduced from 18 persons 3 years ago. Also, Health Department staff reduced from 500 to 327; Police from 153 to 148 in addition to 10% budget cut; but Fire increased from 0 to 2 persons. Towns and municipalities depend on 11,000 volunteers in 60 departments. There are 25 paid fire engine drivers. Only volunteers respond to events at Indian Point.

Budget for CY 1978: \$100,000. Funding formula: Local governments-50%, DCPA-50%. All budget monies used up by October 1978. Westchester County budget: \$400 million of which 60% is used for social services, e.g., \$230 million to welfare.

Rockland and Putnam Counties. No data gathered.

Example 13. Kewaunee Wisconsin - Kewaunee County

Current staff: Director plus two staff who are part time. About 60 volunteers participate in exercises. No funding information was gathered.

Example 14. Point Beach 1&2 - Wisconsin - Manitowoc County

Current staff: In need of a director and secretary. County Board Chairman is acting. DCPA P&A funds to be applied for once the local office is organized.

EXHIBIT 16. FUNDING DATA FOR LOCAL CIVIL DEFENSE/EMERGENCY SERVICES RELEVANT TO
RADIOLOGICAL EMERGENCY RESPONSE PLANS AND PREPAREDNESS IN SUPPORT OF
OPERATING NUCLEAR POWER PLANTS

Sites with Two-State Planning

Example 1. Farley 1- Alabama/Houston and Henry Counties and Georgia/Early County

Houston County. Current staff: Director plus 2 staff. Budget for FY 1979: \$53,500.
Funding formula: Dothan-Houston County-\$36,500, DCPA-\$17,000. DCPA monies are less than
50% because they have been becoming less available.

Henry County. Current staff: Director. No funding data collected.

Early County. Current staff: Director. No funding data collected.

Example 2. Quad Cities 1 and 2 - Illinois/Whiteside and Rock Island Counties and Iowa/Clinton
and Scott Counties

Current staff: Directors for all 4 counties. Administrative budget for Scott County -
\$50,000.

Example 3. Zion 1 and 2 - Illinois/Lake County and Wisconsin/Kenosha County

City of Zion. Current staff: Director (part time).

Budget for FY 1978: \$14,500. Funding formula: \$6,000 from general tax revenues, \$4,500
from Emergency Services and Disaster Agency tax of 25¢ per resident, and \$3,000 from DCPA
P&A.

Kenosha County. Current staff: Director. No funding data collected.

Example 4. Salem 1 - New Jersey/Salem County and Delaware/New Castle County

Salem County-Lacey Township: Current staff: Part time director. Police chief handles most
duties. No financial problem because of \$16 million surplus in budget as of January 1979.

New Castle County. Current staff: Police chief is nominally the CD director. No funding
data collected.

Example 5. Trojan - Oregon/Columbia County and Washington/Cowlitz County

Columbia County. Current staff: Director plus half-time secretary. Budget for FY 1978:
\$22,000. Funding formula: Columbia County-50%, DCPA P&A-50%. Columbia County budget for
FY 1978: \$7 million. Property tax increase limited to 6% per year under Oregon State law.

Cowlitz County. Current staff: Director plus two staff. Budget for FY 1978: \$36,854.
Funding formula: Cowlitz County-\$9,716, Five member cities-\$8,361, DCPA P&A and other
matching funds-\$18,777.

EXHIBIT 17. FUNDING DATA FOR LOCAL CIVIL DEFENSE/EMERGENCY SERVICES RELEVANT TO RADIOLOGICAL EMERGENCY RESPONSE PLANS AND PREPAREDNESS IN SUPPORT OF NUCLEAR POWER STATIONS THAT ARE UNDER CONSTRUCTION

Example 1. Bellefonte 1 and 2 - Alabama - Jackson County

Current staff: Director plus 2 staff. Budget for FY 1979: \$21,000 from September 1978 through June 1979. After June the office will close because of inadequate funds. Funding formula: local governments-50%, DCPA-50%. During the last 10 years, there has been no change in budget from municipalities. Jackson County has been paying an increasing share of the local government contribution. Current DPCA P&A funding is about \$9,000. Jackson County has applied to TVA for \$20,000 for the work done to date on the radiological emergency response plan for Bellefonte and for \$22,000 for a radio communications system. Jackson County built a Federally qualified EOC (PF=885) in 1968 without Federal funds for \$200,000. However, it is currently without radio communications.

Example 2. Diablo Canyon 1 and 2 - California - San Luis Obispo County

Director is no longer with San Luis Obispo County so no funding data was obtained.

Example 3. Sequoyah 1 and 2 - Tennessee - Chattanooga - Hamilton County

Current staff: Director plus 3 staff and secretary. Budget for FY 1979: \$89,000. Funding formula: Local government-58%, DCPA-42% from P&A and other matching funds. Budget has been only tracking inflation in recent times. Hamilton County budget for FY 1979: \$85 million.

Example 4. Watts Bar 1 and 2 - Tennessee - Rhea and Meigs Counties

Rhea County. Current staff: volunteer director who is otherwise funeral home director. No funds have been available for CD work since 1950. County budget is stretched to limit.

Meigs County. Current staff: part time director who is also part time for Athens-McMinn County. In addition, he is also the purchasing agent for Athens-McMinn County. Budget for FY 1979: \$57,000. Funding formula: Meigs County-\$2,500, Athens-McMinn County-\$37,500, DCPA-\$17,000. Meigs County budget is very limited.

Example 5. WNP 1, 2 and 4 - Washington - Benton and Franklin Counties

Benton County. Current staff: Director. Budget for FY 1979: \$17,000. Funding formula: Benton County-50%, DCPA P&A-50%. Benton County budget for FY 1979: \$4.6 million.

Franklin County. Current staff: Director. Budget for FY 1979: about \$6,000. No DCPA P&A funding is received.

EXHIBIT 18. ALL RISK CONCEPT FROM LOCAL PERSPECTIVE .

GOAL: To develop and maintain an emergency preparedness program which will enable Cowlitz County to respond to a natural, man-made, or nuclear disaster with the utmost efficiency to assure the preservation of life to Cowlitz County residents and the protection of their property as outlined in RCW 38.52.

OBJECTIVE: To plan for and be prepared to perform emergency response and recovery actions necessary as a result of any of the following disasters:

1. Tornado
2. Forest Fires
3. Wind Storms
4. Mud Slides and Avalanches
5. Floods
6. Heavy Snow
7. Heavy Rains
8. Blights and Plagues
9. Volcanic Eruption
10. Volcanic Fallout
11. Volcanic Mud Flow
12. Volcanic Lava Flow
13. Severe Temperatures (heat and cold)
14. Droughts
15. Energy System Failures
16. Energy Shortage
17. Communications System Failures
18. Dam Failures
19. Riots
20. Sinking Water Craft
21. Railroad Accidents
22. Aircraft Accidents
23. Highway Crashes
24. Bombings (sabotage or other explosives)
25. Widespread Pollution Accident
26. Nuclear Accident
27. Earthquakes
28. Others Unknown at this Time

Source: Goals and Objectives, 1978, Cowlitz County Emergency Services, Kelso, Washington

Note: There is no priority in the numbering.

EXHIBIT 19. TAXES RECEIVED BY LOCAL GOVERNMENTS FROM UTILITIES
HAVING COMMERCIAL NUCLEAR POWER STATIONS

Sites with One-State Planning (Operating Stations)

Example 1. Browns Ferry 1, 2 and 3 - Alabama - Morgan, Lawrence and Limestone Counties

Morgan County. Direct TVA payments in lieu of taxes for FY 1978 - \$3,553.

Lawrence County. Direct TVA payments in lieu of taxes for FY 1978 - \$2,889.

Limestone County. Direct TVA payments in lieu of taxes for FY 1978 - \$4,122. Some impact mitigation funds received.

Note: Direct TVA payment in lieu of taxes for FY 1978 to Alabama - \$19.2 million. Alabama does not redistribute currently but shall start in 1979.

Example 2. Humboldt Bay - California - Humboldt County

No data collected.

Example 3. Rancho Seco 1 - California - Sacramento County

The county does not assess the Rancho Seco plant nor collect taxes from SMUD because it is a public utility. Two school districts are collecting between \$300 and \$400 per year. Sales tax receipts are reported to be up.

Example 4. San Onofre 1 - California - Orange and San Diego Counties

No data collected.

Example 5. Haddam Neck (Connecticut Yankee) - Connecticut - Twelve Towns

Haddam Neck is receiving about \$750,000 per year in property taxes. School districts receive about \$2 million per year. Other districts do not receive anything except for financing of police force in Haddam.

Example 6. Millstone 1 and 2 - Connecticut - Tri-town

Tax payment to Waterford in 1974 was about \$4 million. This was 59% of the assessed value of Waterford. The property tax constitutes 78% of the revenue for Waterford. Annual wage bill for the 90 workers is about \$1.1 million, not all of which is circulated in the economy of Waterford. Because of the heavy reliance on Northeast Utilities for town revenue, the Board of Selectman recommended that caution should be observed by all town boards and commissions in the expenditure of funds based solely on a substantial portion of the tax base being derived from the utility.

New London and East Lyme participate in Tri-town planning but do not receive any direct revenues.

Example 7. Crystal River 3 - Florida - Citrus and Levy Counties

Citrus County. Florida Power Corporation paid approximately \$3.8 million in property taxes in FY 1978. Estimated payments for FY 1979 are \$4 million.

Levy County. Some property tax income is received from FPC for transmission lines.

Example 8. St. Lucie 1 - Florida - St. Lucie and Martin Counties

St. Lucie County. Florida Power and Light paid approximately \$2.3 million in property taxes for FY 1978.

Martin County. No taxes were paid by FP&L to Martin County.

EXHIBIT 19 (Continued)

Example 9. Turkey Point 3 and 4 - Florida - Dade County

Florida Power and Light paid over \$2 million in property taxes in FY 1978 for the two nuclear units and the two fossil fuel units.

Example 10. Oyster Creek - New Jersey - Ocean County

Jersey Central Power and Light paid Lacey Township taxes of \$3.8 million in 1978. Tax revenues are estimated to increase at the rate of \$1 million per year to reach a level of \$9.2 million in 1985. Forked River will be a contributor in addition to Oyster Creek.

Example 11. FitzPatrick and Nine Mile Point 1 - New York - Oswego County

Power Authority of the State of New York does not pay taxes to local jurisdictions for the FitzPatrick nuclear power station.

Niagara Mohawk paid taxes in 1978 to Oswego County of \$3.4 million. The city of Scriba portion was \$2.2 million.

Example 12. Indian Point 2 and 3 - New York - Westchester, Rockland, and Putnam Counties

Westchester County. Power Authority of the State of New York is paying for Indian Point 3 taxes to the following jurisdiction for 1978: \$1.2 million to Westchester County and \$14,000 to New York State. There is a 10-year sliding scale to zero. Consolidated Edison is paying for Indian Point 1&2 taxes to the following jurisdiction for 1978: \$2 million to Westchester County, \$500,000 to Town and Village of Buchanan, and \$29,000 to New York State.

Rockland and Putnam Counties are not receiving tax revenues from the utilities.

Example 13. Kewaunee - Wisconsin - Kewaunee County

Wisconsin Public Service Corporation paid taxes in 1978 of \$600,000 to Kewaunee County in lieu of real estate tax under Wisconsin State law.

Example 14. Point Beach 1 and 2 - Wisconsin - Manitowoc County

Wisconsin Michigan Power Company paid \$600,000 initially to the county under Wisconsin law. Currently, the level is \$300,000.

Sites with Two-State Planning

Example 1. Farley 1 - Alabama/Houston and Henry Counties and Georgia/Early County

Alabama Power Company paid property taxes of about \$500,000 in 1978.

Henry County. No taxes received.

Early County. No taxes received.

Example 2. Quad Cities 1 and 2 - Illinois/Whiteside and Rock Island Counties and Iowa/Clinton and Scott Counties

No data collected.

Example 3. Zion 1 and 2 - Illinois/Lake County and Wisconsin/Kenosha County

Lake County collected \$12 million in 1977 from Commonwealth Edison for all jurisdictions, e.g., County, forest, North Shore Sanitary, 126 High School Districts, Zion, Zion Township, Park and Library. This estimate is for fossil fuel stations in addition to the Zion nuclear power station.

EXHIBIT 19 (Continued)

City of Zion received \$1.6 million.

Zion Township received \$160,000.

Kenosha County. No taxes received.

Example 4. Salem 1 - New Jersey/Salem County and Delaware/New Castle County

Salem County. Salem County does not receive any money directly from the utility, Public Services Electric and Gas. However, it does collect some indirectly through taxes levied on the townships.

Lower Alloways Creek Township. In 1978, taxes paid by the utility was \$7.9 million. Estimate for 1979 is \$10 million. By 1985, the taxes are estimated to be about \$13 million. This is for Salem 1&2 and Hope Creek 1&2.

New Castle County. No tax revenues received from utility.

Example 5. Trojan - Oregon/Columbia County and Washington/Cowlitz County

Columbia County. Property taxes paid by Portland General Electric (67-1/2% ownership) and Pacific Power and Light (2-1/2% ownership) for FY 1976 was \$3.2 million and \$126,000, respectively. Eugene Water and Electric Board (30% ownership) is a public utility and is tax exempt. Trojan accounts for about 40% of total assessed valuation in Columbia County.

Cowlitz County. No taxes were paid by utilities.

Sites with Nuclear Power Stations under Construction

Example 1. Bellefonte 1 and 2 - Alabama - Jackson County

Direct TVA payments in lieu of taxes for FY 1978 - \$5,053.

TVA is considering funding local plan at \$20,000 and radio communications system at \$22,000.

Example 2. Diablo Canyon 1 and 2 - California - San Luis Obispo County

Pacific Gas and Electric in 1977 paid property taxes of \$4.4 million to San Luis Coastal district and \$80,000 to Lucia Mar. This is the principal source of revenue at the local level.

Example 3. Sequoyah 1 and 2 - Tennessee - Chattanooga - Hamilton County

Direct TVA payments in lieu of taxes for FY 1977 - \$38,419. Taxes from TVA redistributed by Tennessee for FY 1977 - \$88,449.

Example 4. Watts Bar 1 and 2 - Tennessee - Rhea and Meigs Counties

Direct TVA payments in lieu of taxes for FY 1978 - \$6,341 (Rhea) and \$3,711 (Meigs). Taxes from TVA redistributed by Tennessee for FY 1978 - \$123,624 (Rhea) and \$56,427 (Meigs).

Meigs County. \$800,000 received from TVA in socioeconomic impact mitigation funds.

Rhea County. Under study by TVA.

Example 5. WNP 1, 2 and 4 - Washington - Benton and Franklin Counties

Benton County. One source of revenue to the local area during construction of WNP-2 is the sales and use tax paid by Washington Public Power Supply System on materials, equipment and contract labor which will result in payments of \$33.1 million. Of this, about \$29.8 million goes to the State of Washington, \$3.3 million to Benton County, and relatively minor amounts

EXHIBIT 19 (Continued)

to Richland, Kennewick and Pasco. A privilege tax during operation of WNP-2 is estimated to be about \$1.5 million per year. Washington receives 4 percent of this amount with the remainder being split 65 percent to Benton County and 35 percent (minimum) to Richland, Prosser, Burban, Kennewick, Finley and Kiona-Benton school districts. WPPSS is further required to make payments during the construction period to any school district demonstrating an enrollment of pupils of construction workers. After allowing for a normal growth in base year enrollment of 3 percent, WPPSS pays one third of the average annual per pupil cost to the district for all construction pupils of the unit. Under law, WPPSS is allowed to make voluntary payments to other taxing districts experiencing a demonstrated impact during construction of WPPSS projects. Twelve taxing districts have asked for funds under this provision for construction impacts. For WNP 1&4, a settlement of \$4.7 million was paid. For example, one district, Kennewick, was awarded \$874,000. Benton County commissioners refused to participate since their view is that enough tax revenue is already received from WPPSS. From all these impact payments, Benton County Emergency Services did not receive anything directly.

Franklin County. Franklin County Emergency Services did not benefit from all the impact fund payments although Franklin County adjoins the WPPSS site across the Columbia River and is in the prevalent wind direction.

CHAPTER 8. FUTURE ALTERNATIVE FUNDING MECHANISMS

The aftermath of Proposition 13 in California proved that there was not a tax rebellion across the country but rather a heightened awareness that local, State and Federal government officials must use taxpayer dollars more efficiently and effectively in the future. As a consequence, to survive inflation and spending restrictions, budget managers in the local, State and Federal government will be scrutinizing even more closely funding for radiological emergency response plans and preparedness in support of commercial nuclear power stations. This chapter provides them with a menu of future alternative funding mechanisms for this activity that is derived from discussions with many local, State and Federal officials. In addition to the current hodgepodge approach, the most helpful ones explored are a mechanism not requiring additional Federal funds; one that would require some additional Federal funds; and a mechanism requiring NRC funding. Finally, an approach that the author prefers is presented in Part III.

CONTINUATION OF CURRENT HODGEPODGE APPROACH

A continuation of the current hodgepodge funding approach for State and local radiological emergency response plans and preparedness would mean approximately that funding in the future would be as it was historically described in Chapters 6 and 7 - inadequate, sporadic, uncertain and frustrating. No local, State or Federal official would say that all State and local governments would be completely responsive in the event the plans and preparedness had to be tested in an accident situation. This report emphasizes the fact that many gaps still remain at both State and local levels in both planning and preparedness in spite of nearly a decade of effort because of a lack of adequate funding.

In today's and tomorrow's fiscal climate of squeezed budgets, State and local governments will be hard pressed to properly fund from general tax appropriations the primary agencies, such as Civil Defense/Emergency Services and Divisions of Radiation Health. Lack of adequate funding occurs even in those five States temporarily having multi-million dollar budget surpluses, i.e., California, Maryland, Texas, Washington and Wisconsin. Furthermore, supporting agencies in many jurisdictions, such as police, fire, environmental protection and medical, are also finding themselves squeezed by budget trade-offs.

For the moment, there is no expectation for additional funding from the newly created Federal Emergency Management Agency (FEMA), the inheritor of DCPA, FDAA and FPA. A cursory glance at the FY 1980 budget for relevant program activities will show no growth since FY 1978 when adjustments to constant dollars are made (see Table 4). This view is supported by conversations with a number of FEMA, State and local officials. In fact, construction funds for EOCs will no longer be available - a policy pursued since FY 1978. Instead, funds formerly earmarked for that program will be used for crisis relocation planning.

TABLE 4. FEDERAL FUNDS FOR THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

Program by Activities	Funds (millions of dollars)		
	1978 actual	1979 estimate	1980 estimate
1. Financial assistance to States	37.0	40.7	39.0
2. Plans and preparedness	58.9	60.9	66.0
3. Warning and communications	22.9	21.8	26.1
4. Information and education	5.2	6.5	7.9
Total direct program	124.0	129.9	139.0

Source: "The Budget of the U.S. Government, Fiscal Year 1980"

Note: See footnotes for definitions of programs.

1. Financial assistance to States. Provides matching grants to State and local governments to assist them in developing and maintaining an organizational capability to meet their responsibilities under the Federal Civil Defense Act of 1950, as amended, and in the design, construction, equipping, and operation of State and local emergency operating centers and warning systems.
2. Plans and preparedness. Provides for the distribution and maintenance of radiological defense equipment as a basis for a nationwide radiological detection and monitoring system; the development of a nationwide inventory of fallout shelters and plans for their use in emergency periods; planning for the relocation of people and attendant care in a period of crisis; the identification and evaluation of current and possible future threats to the U.S. economy from dependence on the natural, industrial, or economic resources of any foreign nation; the development of concepts, plans, and systems for managing the Nation's critical resources in a range of civil crisis contingencies; the direction and implementation of policies, plans, and programs to meet approved objectives for general war and controlled conflict preparedness; the leadership and guidance in the development of an analytical base for broad non-military defense policy; and the improvement of the technical basis for ongoing and potential civil defense programs and operations.
3. Warning and communications. Provides for the operation, maintenance, and continuing development of the nationwide emergency warning system and the communications systems essential to the continuity of Government programs.
4. Information and education. Provides for training, education, and public information in support of those activities which are required to develop and maintain an optimum capability to perform essential actions in emergency periods to enhance survival probabilities.

Therefore, a continuation of the current hodgepodge funding approach will not allow important elements of State and local plans and preparedness to continue to be adequately developed. Furthermore, those elements now in good shape may deteriorate considerably. For example, highly trained personnel will seek other jobs not related to emergency planning and preparedness and expensive equipment will deteriorate due to lack of maintenance.

FUNDING MECHANISMS NOT REQUIRING ADDITIONAL FEDERAL FUNDS

A number of funding proposals have been made by local and State officials for raising the required monies for plans and preparedness without requiring additional Federal funds. They include:

- State tax;
- Local tax;
- Extension of socioeconomic impact fund;
- Statewide fund from local tax revenues;
- Energy tax fund;
- Application fee;
- Executive budget fund;
- Joint utility/State/local effort; and
- Funding by means of NRC licensing requirements.

State Tax

Illinois is creating "The Nuclear Safety Emergency Preparedness Fund" to finance radiological emergency plans and preparedness in support of nuclear power stations, away-from-reactor spent fuel storage and spent nuclear fuel shipments. In legislation (SB 1084) signed by Governor Thompson in September 1979, the nuclear utility industry in Illinois will bear the costs associated with plans and preparedness. (See Exhibit 20.) The fees are:

1. A one-time charge of \$350,000 per nuclear power station in Illinois to be paid by the owners of the station;
2. An annual fee of \$75,000 per year for each nuclear power reactor for which an operating license has been issued by the NRC, to be paid by the owners of nuclear power reactors operating in Illinois;
3. An annual fee of \$25,000 per year for each site for which a valid operating license has been issued by NRC for the operation of an away-from-reactor spent fuel storage facility, to be paid by the owners of facilities for the storage of spent nuclear fuel for others in this State; and
4. A fee of \$1,000 per shipment of spent nuclear fuel received at a facility referred to in (3) to be paid by the owners of such facilities.

Some of the uses of these monies are discussed in Chapter 2. On an interim basis, before the fees are implemented, the Governor allocated out of general revenues \$200,000 for the Emergency Services and Disaster Agency (ESDA) for the period July 1, 1979 through June 30, 1980 in order to start preparing the plan. The Department of Public Health gets \$125,000. These sums cover costs for two planners, one secretary and one consultant for ESDA and for several positions with the Department of Public Health.

The Oregon Legislature recently passed and Governor Atiyeh signed legislation on July 24, 1979 dealing with emergency planning (SB 641). (See Exhibit 21.) The act has the operator of a nuclear power station pay an annual fee of \$100,000 to Oregon Department of Energy for State and local government plans and preparedness for the 10-mile and 50-mile Emergency Planning Zones.

Mississippi is using a fee system on nuclear power stations to raise revenue for environmental surveillance. The revised formula is \$3 per megawatt thermal for the first unit and \$1 per megawatt thermal for the second unit. Applied to Grand Gulf 1 and 2, this fee will bring in \$15,000 annually which is adequate for the surveillance activity. There is some consideration of expanding this scheme to include radiological emergency response plans and preparedness once the costs to State and local governments are better understood.

Illinois notes that one of the principal advantages of the State tax approach is that a State can move more quickly than the Federal government once a funding need is identified. Also, a State is not encumbered by many Federal regulations that historically have accompanied Federal grants in other areas. Finally, a State tax provides stability in funding since the flow of money does not depend on fiscal cycles in State government.

The main deficiency of the State tax approach, from a national point of view, is that all impacted States would have to take separate action in order to be protected. For example, the Illinois legislation does not allow dispersal of funds to Wisconsin which is impacted from the Zion nuclear power station, nor to Iowa which is impacted by the Quad Cities nuclear power stations. In the same way, the Oregon legislation does not allow distribution of any funds to Cowlitz County, Washington, which is impacted by the Trojan nuclear power station located in Columbia County, Oregon. In principle, provisions could be made to make grants to out of State impacted communities on a good neighbor basis. Achievement of all States acting on their own may take a long time even though the Three Mile Island accident has certainly accelerated the pace of State interest in these matters. Some adjacent States, such as Delaware, Kentucky, and West Virginia, that may never have nuclear power stations, are unable to use the State tax approach and would remain unfunded from this alternative.

Local government officials have highlighted an important deficiency from their point of view - the distribution of funds from State government to the impacted local level. Some believe that local government will be inadequately funded.

Local Tax

Illinois is the only State that has a funding provision for disaster activities for local governments out of the 12 States where inquiries were made. According to its Emergency Services and Disaster Operations Act (P.A. 79-1084, effective October 1, 1975, paragraph 1119), a tax can be levied by each political subdivision for ordinary expenses. The limit is 25 cents per capita. The City of Zion (Zion) raised \$4,500 in FY78 from this tax. The sum is clearly inadequate to meet Zion's needs. How widely this tax is used in Illinois has not been determined.

Oswego County's (Nine Mile Point and FitzPatrick) citizens are considering a "just compensation" tax as some solace for the inherent risks of living near nuclear power stations. Whether this kind of tax will include local Civil Defense/Emergency Services activities is being investigated as part of a review of the present level of compensation in the form of wages and taxes paid by the power generating companies.

The principal advantage of the local tax approach is that the local jurisdiction can have control over the use of the funding without meeting stringent State or Federal guidelines. The principal disadvantage is that there are many impacted jurisdictions that have no utility property to tax or other means so that a substantial source of revenue cannot be raised.

Extension of Socioeconomic Impact Fund

Washington and Tennessee are the only States where significant socioeconomic impact funds have been created as described in the previous chapter. These funds apply only to the Washington Public Power Supply System and Tennessee Valley Authority. In both cases, some consideration has been given by State and local authorities to include radiological emergency response plans and preparedness as an extension of the socioeconomic impact funds. However, it appears that the utilities prefer not to mingle the two types of funding together. A principal reason is that the socioeconomic impact fund deals with the construction phase primarily and does not obligate the utility to a funding activity that extends over the lifetime of the nuclear power station. To what degree these utilities will involve themselves in the funding of radiological emergency response plans and preparedness is now uncertain. Nevertheless, this extension approach shows some promise for the States concerned. From a national perspective, the principal disadvantage of this approach is that only two States are covered.

Statewide Fund from Local Tax Revenues

Assemblymen Stewart, Herman and Karcher of New Jersey introduced a bill in the New Jersey State Legislature on April 24, 1978, that would create from local tax revenues a statewide

fund for radiological emergency response plans and preparedness. The basis is that any municipality where a nuclear power station is located receives a share of the franchise and gross receipts taxes imposed on that facility by New Jersey. This bill would permit such a municipality to grant a portion of such share, up to \$250,000 annually, to the affected counties and municipalities for the purpose of preparing, testing and implementing nuclear emergency response plans. (See Exhibit 22.)

According to New Jersey Civil Defense/Disaster Control officials, the sum of \$250,000 per year is adequate to cover all State and local costs for plans and preparedness. The Townships involved are Lower Alloways Creek (Salem 1 and 2 and Hope Creek 1 and 2) that now enjoys a budget surplus of \$16 million, and Lacey Township (Oyster Creek and Forked River) that has a current tax revenue of \$3.9 million per year with an anticipated revenue of \$9.2 million in 1985. The bill passed the New Jersey General Assembly on May 1, 1978 and the Senate on May 7, 1979. The bill is now being considered by Governor Byrne.

The principal advantage of this approach is that it uses primarily tax surpluses derived from nuclear power stations for an impact related to them. The entire State benefits - from both the State and local perspective. It may be applicable to other States as well. For example, Calvert County, Maryland (Calvert Cliffs 1 and 2) is reported to have a budget surplus of about \$10 million for FY 1978. This approach could be used even in areas where there is not a budget surplus but substantial tax revenue from the nuclear power station.

The principal disadvantage is that the bill depends upon the municipality granting the money and usually these kinds of funds are jealously guarded. Therefore, funds are not assured each year. Another disadvantage is that impacted jurisdictions out of the State would not benefit from the plan.

Energy Tax Fund

A tax on electricity is used only in California (currently at 0.1 mill per kwh) and Maryland (currently 0.21 mill per kwh) to fund their energy activities. However, it does not include funds for radiological emergency response plans and preparedness. The tax on electricity use in California and Maryland appears to satisfy only costs associated with comprehensive energy planning in addition to forecasting, environmental review, and research programs pertaining to power station siting. An increase in tax rate would be necessary to cover costs for radiological emergency response plans and preparedness. Also, the tax revenue would have to be earmarked for the Civil Defense/Emergency Services departments instead of the planning and siting departments.

A principal advantage of this approach is that the funding is regular and a small extension of existing tax revenue. For example, California raised about \$7.8 million for FY 1977 and Maryland received about \$7.5 million for FY 1977 for their current energy activities. From a national perspective, the principal disadvantage is that so few States have adopted this approach generally to energy activities.

Application Fee

The most common financing mechanism used for siting purposes is the application fee that is required of the utility proposing to build a new unit. Five States have a fee of \$25,000 (California, Connecticut, Florida, New York and Washington); Massachusetts has a maximum fee of \$50,000. In Arizona, the fee is \$10,000 for a new site and \$7,500 for expansion of an old one. Two States, Minnesota and Ohio, base the application fee on the estimated cost of construction for the proposed energy facility. Because of the low level of the fee, siting costs are not covered. Only Minnesota and Ohio raise substantial amounts. For example, Ohio raised over \$400,000 in FY 1978 and Minnesota raises \$500,000 for a billion dollar station. In general, the remaining funds come from appropriations from general State revenues.

Unless the application fee is buttressed by an annual assessment, such as in the case of Oregon, the tax revenue gathered by this approach is far from adequate to cover costs. The principal disadvantage is that there is no continuity in funding. It may be good, however, to help finance initial plans and preparedness.

Executive Budget Fund

Drawing again from the experience in siting, for those States where the siting function is delegated to an existing agency, the siting costs are covered by the executive budget of the agency, such as for Iowa, Kentucky, Nevada, New Hampshire, New Jersey, New Mexico, South Carolina and Vermont. In the same way, executive budget funds could be used by the States to cover the costs of radiological emergency response plans and preparedness. This could be related to the siting body or, alternatively, could be used by the State Civil Defense/Emergency Services and Division of Radiation Health.

The principal advantage is that the radiological emergency response planning and preparedness gains visibility and therefore higher priority in the allocation of funds. The principal disadvantage is in lack of continuity from year to year.

Joint Utility/State/Local Effort

This mechanism was suggested by Wisconsin especially for the Emergency Planning Zones. The underlying assumption is that each entity continues to do the kind of activity it is now doing best. The utility gathers the necessary data for the 50-mile emergency planning zone and presents it in a form for governmental decisionmaking. This is a natural extension in distance and scope of what the utility, through its contractors, does now for environmental surveillance as required by NRC. The State radiation health would oversee this utility-sponsored work and thus not have to repeat hundreds of thousands of dollars worth of work already done by the utility. The 10-mile emergency planning zone would remain within the complete purview of State and local government as is now currently practiced. This sharing approach is believed to be the most cost beneficial by its advocates.

The principal advantage is that all interested participants share in the cost and funding. The disadvantage is that there may be impacted jurisdictions, especially out-of-State, that may not be included in the plan and preparedness.

Funding by Means of NRC Licensing Requirements

A number of State and local officials advanced the idea of changing NRC licensing requirements to make the utility supply the necessary funds, or its equivalent, at the State and local level so that there would be adequate plans and preparedness. One variant of this suggestion comes from the GAO in its report, "Areas Around Nuclear Facilities Should Be Better Prepared for Radiological Emergencies," March 30, 1979 (Ref. 27). GAO believes that NRC should license nuclear power stations only where State and local emergency plans and preparedness meets all the essential planning elements of the principal planning document, NUREG-75/111 (Ref. 28).

The principal advantage of this approach is that adequate political pressure can be brought to bear to release funds from either the utility, or the State and local governments, for plans and preparedness. The alternative is that the nuclear power station would not be licensed, or if already licensed, would not continue to retain its license.

The principal disadvantage of the NRC licensing requirement approach is that legislation is most likely needed. Legislation is the route that the Senate is taking in consideration of S. 562 by passing the Hart-Simpson Amendment, as modified by Senator Glenn, which deals with State emergency planning (Ref. 29). Nothing about funding is present in the Senate bill. At about the same time, the Commission decided to initiate an expedited rulemaking procedure on the subject of State and local emergency response plans and those of licensees (Ref. 30). One of the issues addressed is: "Should NRC concurrence in associated State and local emergency response plans be a requirement for continued operation of any nuclear power plant with an existing operating license? If so, when should this general requirement become effective?" A related question is: "Should financial assistance be provided to State and local governments for radiological emergency response planning and preparedness? If so, to what extent and by what means? What should be the source of the funds?" The rulemaking procedure could possibly give additional insight into the issues.

FUNDING MECHANISMS REQUIRING ADDITIONAL FEDERAL FUNDS

State and local officials have suggested a number of various mechanisms for future funding that would require additional Federal funds beyond what is currently available. Some of the more promising ones include:

- Coastal Energy Impact Program (CEIP);
- Extension of FEMA P&A funds to all risks;
- Cost sharing, @ 75/25;
- Federal consultants;

- Federal training and quantity purchasing of equipment;
- Law Enforcement Assistance Administration (LEAA) funding of communications;
- NOAA funding of repeater stations; and
- General tax revenues.

Coastal Energy Impact Program

The Lacey Township Committee of New Jersey (Oyster Creek and Forked River) applied to the State of New Jersey for the development of a township evacuation plan under the Coastal Energy Impact Program planning assistant grant program of Section 308(c) of the Coastal Zone Management Act of 1972, as amended. To date, Delaware and Washington are the only other States that have showed some interest in this source of Federal funding for radiological emergency planning in support of commercial nuclear power stations.

The Coastal Energy Impact Program (CEIP) provides some funding for planning and environmental grants, but the large majority of the funding is for the credit assistance in the form of loans and loan guarantees to the States for communities adversely affected by energy development and for formula grants to the States. The 1976 amendments created a \$1.2 billion, 10-year aid program. The bulk of the money is aimed primarily at Outer Continental Shelf oil and gas activities, but other energy facilities, such as commercial nuclear power stations, are included.

In 1978, the second year of the Coastal Energy Impact Program, funding levels continued at much the same level as the first, with \$110 million available for credit assistance to communities needing new public services on account of coastal energy development, \$17.7 million for formula grants, \$3.5 million for planning grants, and \$1.5 million for grants to protect the environment or improve recreation.

The Lacey Township application is for \$55,410 and would be mainly for an evacuation plan and other elements as described in Exhibit 5, Example 10. About \$44,000 would come from CEIP and the remaining 20 percent, or about \$11,000 from local government. The application was not approved by the New Jersey Department of Energy, which administers CEIP. The two primary reasons are that Lacey Township receives and will receive adequate revenue from the operating utilities, \$3.9 million in 1978 and increasing to \$9.2 million for 1985, to do the funding for planning itself, and that Lacey Township did not involve the approximately 12 surrounding municipalities that would be also impacted. The current State view is that if all the municipalities in Ocean County applied, then the plan may become eligible.

Delaware has \$555,000 in formula grant money for FY 1979. The Delaware Office of Management, Budget and Planning would be willing to accept a proposal for a New Castle County radiological emergency response plan for the Salem and Hope Creek nuclear power stations that are located across the Delaware River in New Jersey. Such a plan would have to be developed in conjunction with the Delaware Department of Public Safety and the County Executive of New Castle County. The largest competitor for planning funds is the Port of Wilmington with an estimate of \$401,000 for oil tanker and pipelines as its main objective. However, the intrastate allocation process would most likely still leave sufficient funding for New Castle County.

In Washington, a proposal was advanced by the Department of Emergency Services to develop and implement a hazardous assessment information system that would have included coastal nuclear power stations, such as WNP 3 and 5 in Grays Harbor County and Skagit 1 and 2 in Skagit County. The funding level was to be \$125,000 for the first 12 months plus the first phase of implementation. Cost per facility was estimated at about \$30,000. Besides Grays Harbor and Skagit Counties, four other counties would be impacted. The end result was that the Washington Department of Ecology, that administers CEIP, turned the project down. Apparently, the reason for the refusal was a turf battle between the Department of Ecology and the Department of Emergency Services.

The principal advantages of CEIP are several. CEIP could become an almost nationwide program at least for planning, since a large number of commercial nuclear power stations are sited near the Atlantic and Pacific Oceans, the Gulf of Mexico and the Great Lakes because of the need for cooling water. And, if major rivers are eventually included in CEIP, as some people hope, use of CEIP funds could be close to a nationwide program. If Federal funding other than planning is included, a sum up to \$1.2 billion, excluding oil and gas and other higher priority items, may become available. The administering bodies in the States, which are more environmentally oriented, could be important for setting up regional programs based on coastal zones and river basins for financing the 50-mile Emergency Planning Zone for the ingestion pathway.

The principal disadvantages are related to priority setting and institutional barriers. Offshore oil and gas operations appear to take priority over radiological emergency response plans and preparedness thus making it less likely that adequate funds will be allocated. Institutional barriers involve the relationship of Departments of Civil Defense/Emergency Services and Departments of Environment and how they will relate to Federal funding bodies. In the first case there is FEMA, and in the second case there is the National Oceanic and Atmospheric Administration (NOAA) of the Department of Commerce. State Radiation Health is not included here. This tends to lead to disputes involving overlapping jurisdictions. However, there is a joint FEMA/NOAA initiative for natural hazards planning and preparedness that began in 1979. A final disadvantage from a national perspective is that States and local governments not in the coastal zone are not the beneficiaries of this type of Federal funding.

Extension of FEMA P&A Funding to All Risks

One of the strategies on which FEMA is based is "dual use." This means that civil defense mechanisms should be tested and used for natural and accidental disasters as well as attack preparedness. Therefore, the extension of FEMA personnel and administrative (P&A) funding to all risks would allow more comprehensive coverage in the future than in the past. State and local officials believe that this kind of policy decision would allow them somewhat more adequate manpower especially for the planning phase.

The principal advantage of this approach is that radiological emergency response planning in support of commercial nuclear power stations will receive higher priority with regard to nuclear attack planning. The principal disadvantage is that the funds are restricted to plans. Preparedness funding, such as for exercises, training and resources, is not included.

This is a proposal that future FEMA funding be matched at 75 percent Federal and 25 percent State or local funds for both P&A and preparedness. To date, DCPA funds on a 50/50 basis as required by law. State and local officials believe that a 75 percent level of Federal funding would further stretch the State and local matching dollar. Also, the priority for this activity would be increased at both State and local levels. It is unknown whether priorities on the Federal side can be reordered within FEMA to free the additional funds. Alternatively, the FEMA budget would have to be increased. Some local officials would never accept such an arrangement for P&A because in their view, once the Federal share exceeds 50 percent, the local civil defense/emergency service person becomes, in a sense, a Federal employee and not as subject to local authority. Finally, a principal disadvantage would be that the Federal Civil Defense Act of 1950 would have to be amended.

Federal Consultants

Illinois local government officials believe that major assistance can be given to local government by having a Federal consultant help in the planning area. A program similar to the U.S. Department of Agriculture's extension program was offered as a model.

Wisconsin believes that a Federal consultant working with State and local government officials could bring Wisconsin to the NRC concurrence level within one year. The Federal-State Intergovernmental Exchange program may be the vehicle needed to achieve this objective.

A more comprehensive involvement of the Regional Advisory Committee, especially with local government, could help States achieve NRC concurrence more rapidly as well as to a higher degree was the opinion of a number of State and local officials. A close working relationship would be especially helpful to speedily implement the 10- and 50-mile Emergency Planning Zones, if adopted, and other new items, such as the Protective Action Guides for foodstuffs and animal feed.

The Interorganizational Advisory Committee (IOAC) clearly points out that there is a need for qualified Federal consultants to provide technical assistance to State and local planners. The leadership role should be left to State and local officials because when the consultant writes the plan, the important element of personal involvement of the players is missing.

Whereas all the Federal consultancy programs described above are useful, they fall short of the funding necessary for radiological emergency response plans and preparedness. They could, nevertheless, still be an adjunct to any other kind of funding program.

Federal Training and Quantity Purchasing of Equipment

Most State and local officials make a special point of encouraging continued and expanded Federal support of radiological emergency planning and preparedness courses as described in Chapter 4. One approach in the search for a single curriculum could be the creation of an Institute for Radiological Emergency Response Planning and Preparedness. The Institute would pull together under one roof and coordinate all the relevant Federally funded training programs that are currently being funded and organized by a myriad of agencies, such as the Nuclear Regulatory Commission, the Federal Emergency Management Agency, the Environmental Protection Agency, the Department of Transportation, the Department of Energy, and Health, Education, and Welfare. The nuclear industry has grown to the maturity and size that such an Institute should be considered seriously. At the Institute, State and local government officials in addition to the first-at-the-scene would be trained in a systematic and coordinated fashion and be properly certified. All graduates would have the prestige of certification from a nationally recognized institute. The creation of a comprehensive curriculum by means of the institute approach could be a jointly funded effort of NRC with the newly created Federal Emergency Management Agency. No cost estimate is available for an undertaking of this size.

The quantity purchasing power of the Federal government that would save State and local government millions of dollars was a serious suggestion advanced by a number of State and local government officials. States and local governments would then purchase the needed items from the Federal government. Some examples mentioned are modern lightweight solid-state electronic radiological measuring instruments especially developed for use in support of preparedness for nuclear power stations, and rugged low range dosimeters. This list could be expanded to include ARAC and ring systems for upgraded preparedness, and also to include NOAA storm alert radios. A software item such as computer programs for 10-mile and 50-mile EPZ's may also be useful as well.

These proposals for training and quantity purchasing should help fill the gaps in any funding approach that may be considered. The main problem would be raising the front end money for the equipment, or raising additional Federal funds for continued and expanded training.

LEAA Funding of Communications

The Law Enforcement Assistant Administration (LEAA) funds certain types of communications systems. This source was useful for at least one local government - Meigs/McMinn Counties, Tennessee Civil Defense. The breadth of applicability was not investigated for this report but may be a useful source of funds if future funds are not available.

NOAA Funding of Repeater Stations

In instances in which the NOAA storm alert system is used, NOAA will reimburse the States for a repeater station that has a radius of broadcast of 40 miles on flat terrain. So far,

TVA is the only utility or government that has shown serious interest in this warning technique. (See Chapter 4 for details.) This is another source of funding that may have specific applicability and should be considered in any overall program.

General Tax Revenues

A number of State officials, and especially in Florida, believe that the use of general Federal taxes would be the best way to fund EPZs and related safety activities. This mechanism would be in the spirit of revenue sharing and creative Federalism. In Florida, it was reported that aside from schools, almost all public capital goods come from Federal revenue sharing or grants.

General revenue sharing has been the primary means since 1972 by which the Federal government provides general purpose assistance to State and local governments. In general, each jurisdiction may spend the money for any purpose permissible under its own State and local laws, subject to minimal Federal controls. Revenue sharing outlays for 1979 and 1980 are estimated at \$6.9 billion for each year. A decision on the extension of general revenue sharing programs beyond the September 30, 1980, expiration date is yet to be made.

The principal disadvantage of this approach is that State and local governments are allowed virtually unlimited discretion for its use. As presently structured, NRC would have little assurance that funds were being properly allocated.

FUNDING MECHANISMS REQUIRING ADDITIONAL NRC FUNDS

Three approaches are advanced by State and local officials that would involve NRC funds:

- License fee on owners of nuclear power stations;
- Research funds; and
- Office of State Program consultants on loan to State and local governments.

License Fee on the Owners of Nuclear Power Stations

Simply stated, the licensee fee approach is to get funds from the utility owners of the nuclear power station to impacted State and local governments by means of assessing fees. Currently, NRC does not have the legal authority to impose a fee on applicants or licensees to raise funds to cover State and local government costs for emergency plans and preparedness according to the U.S. Code - Title 31 - Money and Finance, paragraph 483a, "Charges by Federal agencies for services other than public purpose." This conclusion is supported by a number of additional cases. Therefore, legislation is necessary to assess fees.

One legislative approach is the modification of present practice which is to charge on the basis of actual cost to NRC to process the license. The collected fees are held by the U.S. Department of the Treasury in a suspense account awaiting calculation of actual costs after action on the permit or license involved is completed. The current fee schedule charges the

utility about \$125,000 for an application for a Construction Permit (CP). The Construction Permit (CP) and Operating License (OL) fees are around \$1 million each for the first unit. Concurrent unit charges are about several thousand dollars.

The modification required by legislation would assess the operator of each nuclear power station a fee to be called the Radiological Emergency Response Plans and Preparedness Fee. The amount of the Fee is \$1 million, for comparison, the same amount as the CP or OL. The derivation of this amount is given below. All operators of nuclear power stations currently in operation pay after passage of the legislation. Applicants pay the Fee about 2 years before receiving their OL for both the State and local governments to have time for making adequate plans and preparedness. The Fees are put into an interest bearing fund, like a savings account, to be called the Radiological Emergency Response Plans and Preparedness Fund for State and Local Government - which is held in the U.S. Treasury. The interest borne by the Fund is retained and used for plans and preparedness at the State and local government levels. Records are kept of actual costs of plans and preparedness so that adjustments can be made in the amount of the Fee.

An initial estimate of the Fee is derived from the costs reported in Chapters 4 and 5. For NRC concurrence of impacted State and local governments, the combined national present value cost to State and local governments for the period 1980-2000 is \$32 million. Allocated to a site, since there are 101 sites, the present value cost at the time of operation is about \$370,000. (See Appendix C, formula 2. Divide by 87, the coefficient of c.) In order to implement the Emergency Planning Zones, the additional national present value cost to State and local government is \$24 million. Note that this amount excludes the higher risk sites discussed in Chapter 5. Allocated to a site, the present value cost at the time of operation is about \$280,000. Enhanced plans and preparedness that employ ARAC or ring systems have a national present value cost to State and local governments of approximately \$16 million. On a per site basis, the present value cost at the time of operation is \$180,000. The total present value cost at the time of operation per site is \$830,000. Therefore, a Fee of \$830,000 per site is adequate to cover the costs to State and local government over the period 1980-2000 for NRC concurrence, implementing the EPZs and enhancing plans and preparedness employing ARAC or ring systems. However, this fee is inadequate to cover all the costs for the 21 high population (growth) density sites and additional costs for State and local governments. The impact of inflation must also be taken into account. For this reason, a Fee of \$1 million per site is more reasonable. Since there are a number of uncertainties in the estimates, cost records for plans and preparedness should be kept in order to make appropriate adjustments in the amount of the Fee, for example, every 5 years.

An additional feature that could be incorporated would be to make an allowance for States having qualified programs. The nuclear power station owners in these States would not be required to pay the Fee to the Fund. In order to resolve the adjacent State issue, funds could cross State borders by means of compacts, such as the Western Interstate Nuclear Compact and the Southern Interstate Compact. This transference of funds would be recognized by the Fund and due credit given.

The fee system approach is equitable because it follows the principle of cost recovery. In the words of an economist, the external costs are internalized. Since the Fee is a cost of doing business, the cost is passed on to the consumers of electricity, in much the same way the cost of a piece of safety hardware in the nuclear power station, such as an Emergency Core Cooling System (ECCS), is paid for by the consumers of electricity.

The creation of the Fund assures that monies are always available to continuous fund State and local governments. The administration of the funds is an important factor to consider since it is essential that the funds be distributed efficiently and effectively. Since NRC already has satisfactory experience in administering funds to States for environmental surveillance around nuclear power stations, a similar administrative procedure seems to be suitable. FEMA and the Western and Southern Interstate Energy Boards may also be suitable administrative agents.

Research Funds

Two local governments express interest in obtaining some kind of research funds from NRC to understand the implications and costs for planning and preparedness with regard to EPZs. They are Twelve Towns, Connecticut (Haddam Neck), and Cowlitz County, Washington (Trojan). Local officials from Twelve Towns believe that this is particularly important for New England communities because there are so many jurisdictions involved which present planning and preparedness problems unique in the country. On the other hand, Cowlitz County's concerns focus on the 50-mile EPZ and the funding implications for the involved cities in addition to the County. Of special importance is the fact that Cowlitz County is located in Washington and therefore has no kind of taxing authority over Trojan which is sited across the Columbia River in Oregon.

The use of some NRC research funds for a limited number of additional studies may be warranted to better delineate some of these unique problems. The use of these same funds to support State and local governments in their plans and preparedness activities is a completely different issue which is worthwhile pursuing.

Radiological emergency response plans and preparedness at the State and local government levels is beyond "defense-in-depth" since it deals with actions outside the fence of a nuclear power station after an accident, hence the title of this report. The issue raised by local government officials is how best should an NRC dollar be spent to protect the public health and safety - inside the fence, or outside the fence. Their belief is that too much is being spent inside the fence compared to outside the fence.

Research aimed at improved "defense-in-depth," primarily inside the fence of a nuclear power station is substantial. In FY 1978, NRC sponsored light-water reactor (LWR) safety research programs amounted to \$84 million. The pre Three Mile Island estimate for FY 1980 is \$118 million (Ref. 31). The largest items for FY 1980 are systems engineering, \$35 million; loss-of-fluid test (LOFT), \$43 million; and fuel behavior, \$23 million. Smaller items include code development, \$9 million, and primary systems integrity, \$9 million. Also, the

related site technology and engineering program for FY 1980 is estimated at \$10 million. The post Three Mile Island budget environment indicates substantial increases in LWR safety research.

In view of the national present value costs to State and local governments of about \$100 million for 1980-2000, cited above, compared to the LWR Safety Research program of \$118 million for FY 1980 (or even higher after Three Mile Island supplemental appropriations are taken into account), local government beliefs may very well be correct. This situation is especially true because there is no clear path to risk reduction potential due to the controversy surrounding the Rasmussen Report (WASH-1400) and its resultant uncertainty as a result of the Lewis Report. As a consequence, some local officials believe that NRC should be justified in reallocating a substantial sum of safety research funds to support radiological emergency response plans and preparedness at the local and State levels of government, especially for the high population density sites.

Provided that this belief is truly the case, the principal advantage of this approach would be its efficient utilization of limited funds for safety research. The principal disadvantage may be in the difficulty of proving that this is the most efficient allocation of the safety dollar. A better policy may be to fund both at the required levels.

OSP Consultants on Loan to State and Local Governments

Staff members of the Office of State Programs, NRC, could be used as Federal consultants serving the functions to help rapidly develop plans and preparedness in State and local governments as described above. Nominally, 10 would be needed - two for each NRC region. Each one would probably cost \$50,000 per year when salaries, overhead and travel are included. These sums would help the State to defray some costs of planning. This program would total \$500,000 per year. The consultants are needed at least over the next 5 years to fully develop EPZs and related activities and would be helpful insofar as planning is concerned. The consultants would be of little benefit in terms of funding preparedness except by helping State and local governments to identify available sources.

EXHIBIT 20. ILLINOIS NUCLEAR SAFETY PREPAREDNESS ACT

An Act in relation to nuclear safety preparedness amending certain Acts in connection therewith.

Be it enacted by the People of the State of Illinois, represented in the General Assembly:

Section 1. This Act shall be known and may be cited as the "Illinois Nuclear Safety Preparedness Act."

Section 2. It is declared to be the policy of the General Assembly to protect the people of the State of Illinois against adverse health effects resulting from radiological accidents by establishing a mechanism for emergency preparedness to mitigate the effects of such accidents. The General Assembly finds that it is appropriate that the nuclear industry in Illinois bear costs associated with preparing and implementing plans to deal with the effects of nuclear accidents. The fees assessed by this Act are intended to cover the costs of the Nuclear Safety Preparedness Program authorized by this Act.

Section 3. Unless the context otherwise clearly requires, as used in this Act:

- (1) "Department" means the Department of Public Health of the State of Illinois.
- (2) "Director" means the Director of the Department of Public Health.
- (3) "Person" means any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, agency, political subdivision of this State, any other state or political subdivision or agency thereof, and any legal successor, representative, agent, or agency of the foregoing.
- (4) "NRC" means the United States Nuclear Regulatory Commission or any agency which succeeds to its functions in the licensing of nuclear power reactors or facilities for storing spent nuclear fuel.

Section 4. Persons engaged within this State in the business of producing electricity utilizing nuclear energy or operating facilities for storing spent nuclear reactor fuel for others shall pay fees to cover the cost of establishing emergency plans to deal with the possibility of nuclear accidents. The fees shall be used by the Department for the purchase and installation of, and to pay the cost of operating and maintaining, facilities to give the Department early warning capability to detect nuclear accidents, and for the establishment and maintenance of plans prepared by the Department under this Act. Such fees shall consist of the following:

EXHIBIT 20 (Continued)

- (1) A one-time charge of \$350,000 per nuclear power station in this State to be paid by the owners of such stations;
- (2) An annual fee of \$75,000 per year for each nuclear power reactor for which an operating license has been issued by the NRC, to be paid by the owners of nuclear power reactors operating in this State;
- (3) An annual fee of \$25,000 per year for each site for which a valid operating license has been issued by NRC for the operation of an away-from-reactor spent fuel storage facility, to be paid by the owners of facilities for the storage of spent nuclear fuel for others in this State; and
- (4) A fee of \$1,000 per shipment of spent nuclear fuel received at a facility referred to in subparagraph (3) of this Section 4 to be paid by the owners of such facilities.

Section 5. Within 30 days after the beginning of each State fiscal year, each person who possessed a valid operating license issued by the NRC for a nuclear power reactor or a spent fuel storage facility during any portion of the previous fiscal year shall pay to the Department the fees imposed by Section 4 of this Act. The one-time facility charge assessed pursuant to subparagraph (1) of Section 4 shall be paid to the Department not less than 2 years prior to scheduled commencement of commercial operation. For facilities which have commenced commercial operation or are presently scheduled to commence such operation before January 1, 1982, this fee shall be paid within 90 days of the effective date of this Act. Fees assessed under the provisions of subparagraph (4) of Section 4 of this Act shall be paid to the Department prior to the receipt of such shipments.

Section 6. The Department shall prepare a budget showing the cost (including capital expenditures) to be incurred in administering this Act during the fiscal year in question. Such budget shall be prepared only after consultation with those liable for the fees imposed by this Act as to the costs necessary to enable the Department to perform its responsibilities under this Act.

Section 7. All monies received by the Department under this Act shall be deposited in the State Treasury and shall be set apart in a special fund to be known as the "Nuclear Safety Emergency Preparedness Fund." All monies within the Nuclear Safety Emergency Preparedness Fund shall be invested by the State Treasurer in accordance with established investment practices. Interest earned by such investment shall be returned to the Nuclear Safety Emergency Preparedness Fund. Monies deposited in this fund shall be expended by the Director only to support the activities of the Illinois Nuclear Safety Preparedness Program.

Section 8. The Illinois Nuclear Safety Preparedness Program shall consist of an assessment of the potential nuclear accidents, their radiological consequences, and the necessary protective actions required to mitigate the effects of such accidents. It shall include, but not necessarily be limited to:

EXHIBIT 20 (Continued)

- (1) Provision of a remote effluent monitoring system capable of continuously identifying and quantifying the radioactive components of all effluents from nuclear facilities to the environment;
- (2) Development of a detailed fixed facility nuclear emergency response plan for areas surrounding each nuclear electrical generation facility and each away-from-reactor spent fuel storage facility;
- (3) Training of state and local emergency response personnel;
- (4) Development of accident scenarios and exercising of fixed facility nuclear emergency response plans; and
- (5) Provision of specialized response equipment necessary to accomplish this task.

Section 9. Section 5.79 is added to "An Act in relation to State finance," approved June 10, 1919, as amended, the added Section to read as follows:

(Ch. 127, new par. 141.79)

Sec. 5.79. The Nuclear Safety Emergency Preparedness Fund.

Section 10. Sections 3.14 and 8.16 are added to the "Radiation Protection Act," approved July 17, 1959, as amended, the added Sections to read as follows:

(Ch. 111 1/2, new par. 213.14)

Sec. 3.14. Radiation emergency. Radiation emergency is the uncontrolled release of radioactive material from a radiation installation which poses a potential threat to the public health, welfare, and safety.

(Ch. 111 1/2, new par. 218.16)

Sec. 8.16. Radiation emergency contingency plan. The Department shall develop for use by the Emergency Service and Disaster Agency or its successor, a comprehensive contingency plan for the protection of public health, welfare and safety during a radiation emergency.

Section 11. This Act takes effect upon its becoming a law.

OREGON LEGISLATIVE ASSEMBLY--1979 Regular Session

A-Engrossed

Senate Bill 641

Ordered by the Senate May 21
(Including Amendments by Senate May 21)

Sponsored by Senator BURBIDGE

SUMMARY

The following summary is not prepared by the sponsors of the measure and is not a part of the body thereof subject to consideration by the Legislative Assembly. It is an editor's brief statement of the essential features of the measure.

[Creates Utility Consumers' Advocate to represent interests of certain electric, telephone, gas and heating utility consumer interests before legislative, administrative and judicial bodies. Authorizes utility consumers who are natural persons to contribute to financial support of organization and to vote for members of board of governors to manage affairs of organization. Requires affected utilities to maintain separate accounts for consumer contributions and to include certain materials with billings, subject to limited cost reimbursement. Classifies as Class A misdemeanor certain activities constituting interference with organization's functions and operations.] Designates Department of Energy as agency responsible for establishment of rules relating to protection of health and evacuation of communities in the event of an accident at a nuclear power plant or nuclear installation. Specifies that the department shall cooperate with the Health Division rather than the Energy Facility Siting Council in establishing such rules. Requires public utilities operating a nuclear power plant or nuclear installation to disseminate information approved by department to governing bodies of cities and counties which may be affected by an accident at a nuclear facility.

Declares emergency, effective on passage.

A BILL FOR AN ACT

- 1
2 Relating to public safety; amending ORS 453.765 and 453.770; and declaring an emergency.
3 **Be It Enacted by the People of the State of Oregon:**
4 Section 1. ORS 453.765 is amended to read:
5 453.765. The *[Health Division]* Department of Energy in cooperation with the *[Energy Facility Siting*
6 *Council]* Health Division and the Emergency Services Division shall establish rules for the protection of health
7 and procedures for the evacuation of people and communities who would be affected by radiation in the event
8 of an accident or a catastrophe in the operation of a nuclear power plant or nuclear installation.
9 Section 2. ORS 453.770 is amended to read:
10 453.770. A public utility which operates a nuclear power plant or nuclear installation shall disseminate
11 *[through the public media and educational sources]* to the governing bodies of cities and counties that may be
12 affected information approved by the *[Health Division]* Department of Energy which explains rules or
13 procedures adopted under ORS 453.765.
14 **SECTION 3.** ORS 453.765 and 453.770 as amended by sections 1 and 2 of this Act, are added to and made a
15 part of ORS 469.300 to 469.570.
16 **SECTION 4.** This Act being necessary for the immediate preservation of the public peace, health and
17 safety, an emergency is declared to exist, and this Act takes effect on its passage.

NOTE: Matter in bold face in an amended section is new; matter *[italic and bracketed]* is existing law to be omitted; complete new sections begin with SECTION.

OREGON LEGISLATIVE ASSEMBLY--1979 Regular Session

**HOUSE AMENDMENTS TO PRINTED
A-ENGROSSED SENATE BILL 641**

By COMMITTEE ON ENVIRONMENT AND ENERGY

June 28

Amended Summary

Designates Department of Energy as agency responsible for establishment of rules relating to protection of health and evacuation of communities in the event of an accident at a nuclear power plant or nuclear installation. Specifies that the department shall cooperate with the Health Division rather than the Energy Facility Siting Council in establishing such rules. Requires public utilities operating a nuclear power plant or nuclear installation to disseminate information approved by department to governing bodies of cities and counties which may be affected by an accident at a nuclear facility.

Requires each county that has a nuclear-fueled thermal power plant located within county boundaries and each county that has any portion of its area located within 50 miles of a nuclear-fueled thermal power plant to develop written procedures compatible with rules adopted by department relating to evacuation procedures. Specifies contents of rules. Requires operators of nuclear-fueled thermal power plants to pay an annual assessment to fund specified department activities. Requires director to reimburse counties for expenses incurred in complying with provisions of Act. Requires department to assign one inspector to the site of each nuclear-fueled thermal power plant. Increases expenditure limitation for Department of Energy by \$64,854 to pay cost of maintaining on-site inspectors. Limits biennial expenditures from fees, moneys or other revenues collected or received by the department for county emergency planning to \$200,000.

Repealed in part, July 1, 1983.

Declares emergency, effective [on passage] July 1, 1979.

1 In line 2 of the printed A-engrossed bill, after the first semicolon, insert "creating new provisions;" and
2 after the second semicolon insert "appropriating money; limiting expenditures; prescribing an effective date;"

3 After line 15, insert:

4 "SECTION 4. Sections 5 to 8 of this Act are added to and made a part of ORS 469.300 to 469.570.

5 "SECTION 5. Each county in this state that has a nuclear-fueled thermal power plant located within
6 county boundaries and each county within this state that has any portion of its area located within 50 miles of a
7 site within this state of a nuclear-fueled thermal power plant shall develop written procedures that are
8 compatible with the rules adopted by the department under ORS 453.765. The department shall review the
9 county procedures to determine whether they are compatible with the rules of the department.

10 "SECTION 6. (1) The rules adopted under ORS 453.765 shall:

11 "(a) Require counties to prepare evacuation plans for areas within 10 miles of a nuclear-fueled thermal
12 power plant; and

13 "(b) Provide for control of radiologically contaminated foodstuffs in areas within 50 miles of a
14 nuclear-fueled thermal power plant.

15 "(2) The rules may provide for distances different from those specified in subsection (1) of this section if
16 they are supported by site-specific studies approved by the department.

17 "SECTION 7. (1) In addition to any other fees required by law, each operator of a nuclear-fueled thermal
18 power plant within this state shall pay to the department annually, commencing with the fiscal year beginning
19 July 1, 1979, an assessment to fund the activities of the department and the counties in complying with sections
20 5 to 7 of this 1979 Act. The fee assessed under this section shall not exceed \$100,000 per year for any one
21 nuclear-fueled thermal power plant.

22 "(2) The director shall reimburse the counties for expenses incurred by the counties in complying with the
23 requirements of section 5 of this 1979 Act to the extent funds are available under subsection (1) of this section.

EXHIBIT 21 (Continued)

1 The counties shall be reimbursed only for those expenses that are attributable to planning for the protection of
2 the public health and safety in the event of an accident or a catastrophe in the operation of a nuclear-fueled
3 thermal power plant as determined by the director. Reimbursement of the counties will be reduced by the
4 amount of funds available for such planning from other state and federal fund sources.

5 "(3) Funds received by the department under this section are continuously appropriated to the department
6 for payment of expenses of the department and the counties associated with county emergency planning under
7 sections 5 to 7 of this 1979 Act.

8 "SECTION 8. (1) The department shall assign one inspector to the site of each nuclear-fueled thermal
9 power plant. The director shall prepare a written statement of the inspector's responsibilities and authority.

10 "(2) An inspector shall be present at the site of a nuclear-fueled thermal power plant at least 40 hours per
11 week during any time the reactor core is in operation. The director may approve exceptions to this
12 requirement. The inspector may be temporarily replaced by another qualified department employee.

13 "SECTION 9. Notwithstanding any other law, the expenditure limitation for the Department of Energy
14 from all other funds established for the biennium beginning July 1, 1979, by section 1, chapter _____,
15 Oregon Laws 1979 (Enrolled House Bill 5051), is increased by \$64,854, to pay the cost of maintaining the
16 on-site inspector required by section 8 of this 1979 Act.

17 "SECTION 10. Notwithstanding any other law, the amount of \$200,000 is established for the biennium
18 beginning July 1, 1979, as the maximum limit for the payment of expenses from fees, moneys or other
19 revenues, except federal funds, collected or received by the Department of Energy for county emergency
20 planning under sections 5 to 7 of this 1979 Act.

21 "SECTION 11. Sections 5 to 8 of this 1979 Act are repealed on July 1, 1983."

22 In line 16, delete "4" and insert "12".

23 In line 17, delete "its passage" and insert "July 1, 1979".

EXHIBIT 22. NEW JERSEY BILL ON NUCLEAR EMERGENCY PLANNING

ASSEMBLY, No. 1272

STATE OF NEW JERSEY

INTRODUCED April 24, 1978

By Assemblymen STEWART, HERMAN and KARCHER

Referred to Committee on Agriculture and Environment

An Act authorizing certain municipal appropriations for nuclear emergency response plans and supplementing Title 40 of the Revised Statutes.

Be it enacted by the Senate and General Assembly of the State of New Jersey:

1. The governing body of any municipality wherein is located a nuclear-powered electric generating facility is hereby authorized to appropriate and grant to the governing body of the county wherein such municipality is situate, and to the governing body of any other county or municipality, which, in the judgment of the granting municipality, would be affected by an emergency at such facility, funds which shall be used for the preparation, testing and implementation of nuclear emergency response plans designed to prevent or minimize the loss of life or property resulting from an accident, malfunction, act of sabotage, act of God, or any other condition or circumstance occurring at such facility. Such funds shall be taken from any amount received by such municipality pursuant to the provisions of Chapter 30A of Title 54 of the Revised Statutes, and the total appropriations therefor by any one municipality shall not exceed \$250,000.00 annually.
2. This act shall take effect immediately.

PART III. PREFERRED APPROACH

RATIONALE

Risk

Risk on a relative basis provides the reason for determining the governmental entity that should receive priority funding. Local governments are recognized by the States as having the first line of official public responsibility for and to respond to most emergencies because of the proximity to nuclear power stations. This view is valid from the perspective of current NRC rules and regulations where the threat to the local population is characterized by design basis accident scenarios at the nuclear power station, or from the perspective of the proposed 10-mile and 50-mile Emergency Planning Zones concept where the threat to the local population is characterized by melt down accident scenarios at the nuclear power station.

In general, the high population density and growth sites, such as Indian Point, New York, and Zion, Illinois, as identified in Part II, Chapter 5, on the basis of the 10-mile EPZ, deserve higher priority funding compared to low population density and growth sites. However, those low population density sites which lack adequate infrastructure should receive rather high priority funding as well.

The State's role for all emergencies is to develop and maintain a comprehensive program of emergency management that supplements those of the nuclear power station and provides leadership when needed to local efforts in plans and preparedness. For those States without NRC concurrence, adequate plans and preparedness are not demonstrated. For this reason, the local populations nearby nuclear power stations in those States without NRC concurrence could be at greater risk compared to those States with concurrence. Therefore another priority should be to fund those States without concurrence. Concurred States may require a lower priority of funding in order to retain concurrence. All States that have concurrence should be compensated.

Efficiency

A proper funding balance should be achieved between prevention of an accidental release of radioactive materials by means of defense-in-depth inside the fence and radiological emergency response plans and preparedness outside the fence, "beyond defense-in-depth." Currently, the primary objective of defense-in-depth is the prevention of accidental releases of radioactive materials from the site by means of careful design, construction and operation of the nuclear power station and thoughtful selection of its site. The basic safety philosophy of commercial nuclear power stations, defense-in-depth, should be enlarged to include State and local government radiological emergency response plans and preparedness. The keys to this are funding and enforceable regulation as comprehensively expounded in Chapters 2 and 3 of the Atomic Energy

Commission's report, "The Safety of the Nuclear Power Reactors (Light Water-Cooled) and Related Facilities," WASH-1250, July 1973 (Ref. 32) that lays out the concept of defense-in-depth. This concept has repeatedly been endorsed by NRC over the years.

Ideally, the Congress must make a finding and declaration that the national interest requires adequate local and State government radiological emergency response plans and preparedness otherwise the NRC operating license held by the licensee of the nuclear power station would be withdrawn for the case of an operating station or the license would not be issued for the case of a new station. The Congress should assure that the funds are available to accomplish this task. A preferred approach is the establishment of a trust fund for State and local government radiological emergency response plans and preparedness as described in this report. Alternatively, the Nuclear Regulatory Commission could make such a similar finding and declaration for the purpose of assuring the health and safety of the people in the vicinity of nuclear power stations and protecting the environment. The finding and declaration could be accomplished by means of the expedited rulemaking procedure that is now in progress (Ref. 33). Such a finding and declaration by either Congress or NRC are needed in view of the atmosphere of uncertainty that shrouds the safety of nuclear power stations.

Equity

The funding mechanism should have the objective to internalize the external costs of local and State governments. Costs for plans and preparedness should be paid ultimately by the consumer of electricity which is viewed as the most equitable way of doing business. This can be accomplished by levying a fee on the operator of the nuclear power station, who in turn raises the money from the utility owners who in turn pass it on to the consumers after being approved by a public utility commission. The estimated cost for the average residential customer would be approximately one cent per month. The fee method is already used by Oregon and Illinois in their laws and is in concert with the fees paid by the licensee to NRC for Construction Permits and Operating Licenses. Furthermore, this type of funding is embedded in various laws for liability, such as the Price-Anderson Act for nuclear accident liability and section 311 of the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) for recovery of clean up costs from accidents involving oil and designated hazardous substances (Ref. 34).

To assure that States that have earned or are in the process of earning NRC concurrence are treated fairly, State and local governments should be reimbursed for their funds disbursed for plans and preparedness. The earliest time frame for reimbursement could commence from two years prior to the date of NRC concurrence. The principle of reimbursement allows the Federal program to parallel programs of the State without any impediment. This principle is established in the Federal Water Pollution Control Act Amendments of 1972 in section 206 that deals with reimbursement grants to State and local governments for construction of treatment works.

Funding to State and local government should be conducted on a cost recovery basis. If additional funds are needed, they should be recovered from the operating utilities. Any surplus funding should be redistributed to the operating utilities. Cost should be determined by the impacted State and local governments. For example, the 10- and 50-mile Emergency Planning

Zones would provide the basis for identifying the impacted governments. In no case, for example, should a situation occur that western utility operators would be paying for plans and preparedness in the East.

FUNDING LEGISLATION

NRC should draft and propose legislation that would create the Radiological Emergency Response Plans and Preparedness Fund for State and Local Governments. The main provisions should include the following:

1. A Radiological Emergency Response Plans and Preparedness Fee of \$1 million per nuclear power station should be charged to the operator of the station. All operating stations should be charged initially. Others should be charged 2 years before operation. The Fund would total \$75 million by the end of 1980. Alternative arrangements on the fee schedule should be made when it is known what the initial costs for plans and preparedness are for particular nuclear power stations.
2. The Fees should be deposited in the U.S. Treasury in an interest bearing account. The details of the account would be worked out by the Secretary of the Treasury in consultation with the Chairman of the Nuclear Regulatory Commission. The required money for State and local plans and preparedness should be withdrawn by NRC by means of the Congressional appropriations procedures. A detailed annual report should assist in Congressional oversight of the funds. Many of the technical points of the Fund could be similar to the superfund in the proposed Oil, Hazardous Substances, and Hazardous Waste Response, Liability and Compensation Act of 1979 (Ref. 35 and 36). State and local governments should report annually to make full account of their expenditures.
3. Every 5 years, adjustments should be made in the Fee to assure full recovery of costs because of inflation, revised criteria, and other cost related factors. The Fee would be specific to each nuclear power station. Any surplus should be refunded to the operating utilities at 5 year intervals.
4. Those States that have NRC qualified programs of their own, i.e., similar in effectiveness to the national program, should not have to participate. Therefore, the operators of the stations located in those States should not have to pay two fees. Such a provision should be an incentive for States to create and manage their own programs.
5. Any State that has obtained concurrence or is in the process of obtaining concurrence should be reimbursed for previous expenditures up to two years prior to NRC concurrence. The rebate should be to the source, such as the State or local government.
6. Rules should describe how much State and local government can request in any one year. The limits are initially determined by the costs in this report above and

must conform to the guidance for State and local government plans and preparedness as described in the principal NRC planning document, NUREG 75/111 or any subsequent document or regulation.

7. NRC should administer the Fund. (See below.)

ADMINISTRATION OF FUNDS

The objective of any organization that administers the Fund should be the timely distribution of funds to qualified local and State governments without placing burdensome requirements on any party, especially on local and State governments. Among the many candidate organizations that could meet this requirement, NRC, Federal Emergency Management Agency (FEMA) and the boards of the interstate compacts seem to be the most promising. Based on a review of the principal advantages and disadvantages of each, NRC offers the most advantages.

For whatever body administers the Fund, the Federal Grant and Cooperative Act of 1977 (Public Law 95-224) must be followed to distinguish Federal grant cooperative agreement relationships from Federal procurement relationships. For States with NRC concurrence, the grant approach appears to be most suitable. For those States without NRC concurrence, the cooperative agreement seems to be preferable initially. Pursuant to this act, the Director of the Office of Management and Budget shall be making recommendations to the Congress by no later than February 3, 1980, on the most desirable means of implementing Federal assistance. The Division of Contracts, NRC, is participating as an observer in OMB review. Accountability of State and local governments on how they spend the plans and preparedness money should be required.

Nuclear Regulatory Commission

The principal advantage of the NRC administering the funds is that it also is the lead Federal agency, according to a policy determination by the Federal Preparedness Agency (now FEMA) (Ref. 37), in reviewing State and local plans and exercises and therefore could oversee the proper use of the funds. The principal disadvantage is that NRC does not have experience in a grant program, although it has experience in contracting with some State governments for radiological environmental surveillance in the vicinity of nuclear power stations. Such contractual experience could provide an adequate basis for administration of the funds to local and State governments. A grant or contract program were both considered as viable legislative alternatives in a 1976 report by the U.S. General Accounting Office (Ref. 38).

Federal Emergency Management Agency

Both the Defense Civil Preparedness Agency (DCPA) and the Federal Disaster Assistance Administration (FDAA), now reorganized into FEMA, had a great deal of history in the granting of funds to States and local governments for war related civil defense (Federal Civil Defense Act of 1950, as amended) and natural disasters (Public Law 93-288). Such experience would be a principal advantage because the administrative funding apparatus is already in place. Note

should be taken that some State and local officials are not quite pleased on the manner in which funds were administered in the past. Most officials are looking forward to better performance of FEMA. Another advantage of FEMA administration of the funds is that FEMA is a single Federal entity to coordinate and thus fund State and local government plans and preparedness in support of commercial nuclear power stations with funding related to comprehensive emergency management. A principal disadvantage is that FEMA still has to rely on NRC's lead agency role to determine requirements. A short-term disadvantage to FEMA administration is that it may take several years until FEMA is fully established and coordinated.

Interstate Compacts

The boards of the interstate compacts represent a third approach to administration of funds to State and local governments. The Southern Interstate Nuclear Compact (Public Law 87-563) and the Western Interstate Nuclear Compact (Public Law 91-461) are the most likely contenders. A principal advantage is that they both have experience in radiological emergency response plans and preparedness. For example, the Southern Interstate Nuclear Compact provides a legally constituted framework for cooperation of 16 States to take a regional approach to mutual emergency response planning. Activity of its member States culminated in "The Southern Mutual Radiation Assistance Plan" (Ref. 39). The conclusions reached by the member States are:

1. The principle of mutual assistance is unusually applicable to radiation emergency planning;
2. Regional planning is required to protect the public welfare from emergencies with interstate implications;
3. The interstate compact is the only legal means for cooperation between the States in matters of this nature;
4. Interstate cooperation is enhanced by responsible recognition of similarities between States' problems and needs;
5. Problems arising from dissimilar State organization structure or laws can be overcome without damage to basic requirements of a common problem; and
6. Effective State cooperation will be applauded and recognized by Federal agencies and result in a better partnership between the States and the Federal Government.

The 13 States that participate are Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee and Texas. Missouri is included under a supplemental agreement under the Compact. Four States -- Delaware, Maryland, Virginia and West Virginia -- have yet to participate.

The Western Interstate Nuclear Compact provides for a membership of 12 States -- Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington

and Wyoming. In addition to the 12 compact States, action was taken to permit four other States to participate on the Western Interstate Energy Board, the agency of the party States. These four States are North Dakota, South Dakota, Nebraska and Hawaii. They have been asked to enact statutes to become formal members of the Western Interstate Nuclear Compact.

The boards of both compacts are authorized to undertake jointly-sponsored projects; to receive and disburse grants, gifts, and contract funds from any public agency, firm or private source; to enter into supplemental agreements for projects affecting two or more party States; and to act as a fiscal administrative agency for organization and execution of projects involving a variety of agencies, individuals, institutions and sponsors.

Under the Western Interstate Compact, Oregon and Washington signed the "Oregon-Washington Radiological Accident Assistance Agreement" (Ref. 40). The purpose is "to cooperate in the environmental surveillance of and in responding to any radiological incidents resulting from operation of fixed nuclear facilities located at or near boundaries of the party States." There is a special provision for funding that could allow funds for plans and preparedness derived from Portland General Electric's Trojan nuclear power station under the Oregon Law signed July 24, 1979, to be used for local planning in Cowlitz County, Washington. Specifically, the provision states:

The party States agree to bear, in accordance with the provisions of Articles V, VI, and VII of the Western Interstate Nuclear Compact, the costs of executing this agreement, and shall be authorized to receive and disburse funds, gifts, and grants from any public or private sources in implementing activities specified herein.

This type of arrangement can help to resolve outstanding funding issues related to impacted States contiguous to States with nuclear power stations nearby. It could also be beneficial in a regional planning approach associated with the 50-mile EPZ.

The principal disadvantage of the interstate compact approach is that the entire U.S. is not involved. A nuclear compact among the States in the Midwest has not gained enough interest to pass. Potential members include Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Ohio and Wisconsin. There is also a movement to create a Northeast Regional Energy Board Compact (Ref. 41). Radiological emergency response plans and preparedness could become a function of this Compact. Northeast States include Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island and Vermont.

Combinations

Combinations are possible in these types of administrative arrangements. For example, one possible scenario is that the Southern and Western States Energy Boards and their member States would collect and administer their own funds. NRC's primary administrative responsibility in terms of funding would be concentrated on those States in the Midwest and Northeast. If some of these States adopted NRC qualified programs, NRC's administrative task could be reduced still further.

OTHER ACTIONS TO ENHANCE PLANS AND PREPAREDNESS

There are a number of actions that NRC, FEMA, EPA and FDA can take to improve local and State plans and preparedness. Principal ones are described below:

Nuclear Regulatory Commission

1. A program of scrupulous attention to the sections of 10 CFR Part 50, Appendix E, and Regulatory Guide 1.101 that apply to State and local government. The record to date in this area shows that considerably more can be done by working with and encouraging the utilities. More explicit NRC guidance in this area is needed. NRC has already made a start in this direction by means of an action plan for promptly improving emergency preparedness (Ref. 42) and in recommendations by the Task Force on Emergency Planning (Ref. 43). Two of the main elements that affect State and local governments are:
 - a. Determine that an Emergency Operations Center for Federal, State and local government personnel has been established with suitable communications to the nuclear power station; and
 - b. Assess the relationship of State/local plans to the plans of the licensee and to Federal plans [Federal Response Plan for Peacetime Nuclear Emergencies (FRPPNE) and the Interagency Radiological Assistance Plan (IRAP)] to assure the capability to take appropriate emergency actions.
2. Stepped up concurrence in State plans. As a consequence of the Three Mile Island accident, some States have shown more interest than previously and have increased in priority the planning activity. NRC should continue to encourage and cooperate with those States to the fullest extent possible. NRC Chairman Hendrie wrote letters to the Governors of the impacted States pledging NRC cooperation.
3. Rapidly implement the 10- and 50-mile Emergency Planning Zone guidance for State and local governments which was approved by the Commission in October 1979. Early implementation should help State and local government plan more effectively.
4. Encouragement of States to pass their own legislation on funding. Two models already available are the ones enacted in Oregon and Illinois. New Jersey legislation, pending signature by the Governor, offers another model.
5. In order to speed implementation of concurrence, the EPZs, and other activities related to local and State radiological emergency response plans and preparedness, the NRC should have persons working alongside local and State government as technical consultants. The initiative for planning must come from local and State government.

6. Expedite the evaluation of the radioactive iodine monitoring instruments by the Idaho National Engineering Laboratory. Purchase 1000 instruments at \$200 each for distribution to State and local governments. Estimated cost for FY 1980 is \$200,000 for purchase and \$20,000 per year thereafter for maintenance.
7. Assure the purchase of an adequate supply of the thyroid blocking agent, potassium iodide pills, for distribution to State and local government. One estimated cost is no greater than \$1 million.
8. Evaluate the effectiveness of ARAC, monitoring ring, and other offsite monitoring systems. Evaluate preparations for State and local government acquisition if favorable.
9. Evaluate the NOAA storm alert warning system for use at nuclear power stations, especially for those that are sited in sparsely populated areas.
10. Expand and improve training programs.
11. Assure that there is adequate protective action information suitable for distribution to people nearby nuclear power stations.
12. Include emergency planning and preparedness costs for local and State government in the cost-benefit analysis used in siting. The NRC Siting Task Force recommended a 10-mile planning zone and population criteria (Ref. 44).

Federal Emergency Management Agency

1. Urge the 264 crisis relocation planners recently hired for nuclear war related risks to assist local and State government in their peacetime plans and preparedness, especially for the 21 high population density (and growth) sites.
2. Inventory and redistribute in the vicinity of nuclear power stations in CDV-700 gamma ray survey meters and the CDV-138 dosimeters (0-200 mR).
3. Integrate and coordinate State and local plans for nuclear power stations into plans to cope with other types of emergencies, such as the FEMA/NOAA coastal hazards initiative.
4. Review the specifications for the FEMA satellite to include response to State and local government communications networks.
5. Seek to have the Civil Defense Act of 1950 amended because of national priorities related to energy self sufficiency, environmental impact, economics and other factors of broad social concern, to include 100 percent Federal funding for at least one technical director of local government radiological emergency response plans and

preparedness for the 10-mile and 50-mile EPZs for each nuclear power station. If FEMA is unable to accomplish this objective, NRC should seek to fund this program through appropriations. The money could come from the Fund when established.

Environmental Protection Agency

1. Promulgate Protective Action Guides (PAGs), which is currently agency guidance, as Federal guidance on an expedited basis.
2. Complete course for training on the use of PAGs. The present course is limited to plume exposure pathway. The course on the food ingestion pathway needs to be developed.
3. Endorse the Emergency Planning Zones (EPZs) concept as set forth by the NRC/EPA Task Force.
4. Coordinate with the Food and Drug Administration regional implementation plans for the 50-mile EPZ.

Food and Drug Administration

1. Promulgate PAGs as Federal guidance for accidental radioactive contamination of human and animal feeds on an expedited basis. The present status is a proposed rule.
2. Resolve any outstanding Federal policy issues and publish guidance to State and local government concerning the manufacture, purchase, and distribution of potassium iodide pills.
3. Coordinate with EPA regional plans for the implementation of the 50-mile EPZ.
4. Make quality emergency medical training available.

LONG RANGE CONSIDERATIONS

Training Institute

The creation of an Institute for Radiological Emergency Response Planning and Preparedness that could provide a single coordinated curriculum for State and local officials should be considered for the long range. The Institute would supply the necessary trained and certified persons to do the required planning and preparedness in support of commercial nuclear power stations. A cadre of highly motivated and expertly trained personnel could make a major contribution toward best utilizing the limited resources available for plans and preparedness.

Including Transportation and Other Facilities in the Fund

An appropriate addition to the "Radiological Emergency Response Plans and Preparedness Fund for State and Local Governments" may be the inclusion of spent fuel shipments, away-from-reactor storage, and non-commercial and other fixed nuclear facilities. Based on the estimates of this report, a modest fee would be all that is necessary to cover these costs. In fact, Illinois took this approach by including in its legislation a fee of \$1,000 for each spent fuel shipment and \$25,000 per year for each away-from-reactor spent fuel storage site (See Exhibit 20.) The Illinois fees are levied on the owners of the facilities. A national program could do likewise. The same approach could be used to include private facilities, such as radiopharmaceutical factories, and Department of Energy and Department of Defense facilities.

Addition of Federal Costs

The primary objective of this report is to address the cost and funding of State and local government radiological emergency response plans and preparedness in support of commercial nuclear power stations. State and local government costs are proposed to be recovered by a Fee of \$1 million that is levied on the owner of the nuclear power station. However, future consideration should be given to the possibility of recovering costs incurred by the Federal government for training, plan and exercise review, etc. For example, a review of a single exercise by the Regional Advisory Committee is roughly estimated to involve 100 person-hours. The review of a State plan may involve approximately the same effort. The cost of the review or exercise is approximately \$26,000 including overhead. Another example is the cost of program support for Emergency Preparedness in the Office of State Programs, NRC. For FY 1980, this item may reach over \$1 million for 14 persons. How these types of costs are recovered, in the way permit review costs are recovered, or if at all, is a worthwhile subject for future consideration.

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43. "Report of Task Force on Emergency Planning," (Known as the Carter Task Force Report), Commissioner Action Paper, from Lee V. Gossick, Executive Director for Operations, NRC, SECY-79-499, August 21, 1979. Available from the NRC Public Document Room, 1717 H Street, NW, Washington, DC 20555. The Task Force Report should appear as a NUREG document.
44. "Report of the Siting Policy Task Force (USNRC Report NUREG-0625)," Commissioner Action Paper, SECY-79-493, August 16, 1979. Available from NRC Public Document Room, 1717 H Street, NW, Washington, DC 20555.

APPENDIX A

Guide for an Inquiry into the Cost and Funding of
Radiological Emergency Response Plans and Preparedness
at the State and Local Government Levels

A. General Questions (to be answered by OSP and supplemented where necessary by the State
and local government officials contacted).

1. What is the status of the (State) Radiological Emergency Response Plan (RERP)?

Concurrence (date) _____

Nonconcurrence (date) _____

Other _____

2. What percentage of the 70 essential "associated checklist elements" of Supplement No. 1 of NUREG-75/111 are contained in the RERP?

25% _____

50% _____

75% _____

100% _____

Other _____

3. Which essential "associated checklist elements" are not in the RERP?
(Only if answer to preceding question is less than 100%).

4. Which essential "associated checklist elements" lack concurrence?

And why?

(Only if State is not concurred).

5. What percentage of the nonessential "associated checklist elements" of Section IV, NUREG-75/111, are contained in the RERP? (In consideration of how much of the effort and money expended has gone into these items).

6. What major fixed nuclear facilities are considered in the RERP?

Nuclear Generating stations _____

Fuel cycle facilities _____

Other _____

7. What counties are involved for the following facilities?

Nuclear generating stations _____

Fuel cycle facilities _____

Other _____

8. How do transportation accidents involving radioactive materials relate to the RERP for fixed facilities?

9. What is your assessment of overall operational capability requiring specific capabilities and systems such as, warning, emergency information, communications, radiological, etc.

10. Describe the capabilities of State and local governments to perform under the RERP. Furnish explanations.

State: Highly responsive _____

Responsive _____

Adequate _____

Inadequate _____

Other _____

Local: Highly responsive _____

Responsive _____

Adequate _____

Inadequate _____

Other _____

11. How do you view your role in RERP vis-a-vis (local, State, Federal) response?

12. What are the deficiencies, if any, in the RERP for the following areas:

State:

Initial Plan and Preparedness

Emergency plan development _____

Radiological preparedness resources (includes equipment and personnel) _____

Training response personnel (status) _____

Other _____

Updating Plan and Preparedness

Exercising (date of exercises, kind of facility, State and local government) _____

Plan updating _____

Radiological preparedness resources (includes maintenance and replacement of equipment) _____

Retraining personnel _____

Other _____

Local:

Initial Plan and Preparedness

Emergency plan development _____

Radiological preparedness resources _____

Training response personnel _____

Other _____

Updating Plan and Preparedness

Exercising _____

Plan updating _____

Radiological preparedness resources _____

Retraining personnel _____

Other _____

13. What can be done to remove these deficiencies?

State:

Initial Plan and Preparedness

Emergency plan development _____

Radiological preparedness resources _____

Training response personnel _____

Other _____

Updating Plan and Preparedness

Exercising _____

Plan updating _____

Radiological preparedness resources _____

Retraining personnel _____

Other _____

Local:

Initial Plan and Preparedness

Emergency plan development _____

Radiological preparedness resources _____

Training response personnel _____

Other _____

Updating Plan and Preparedness

Exercising _____

Plan updating _____

Radiological preparedness resources _____

Retraining personnel _____

Other _____

14. What interstate and intercounty considerations are in the plan?
15. What kind of training program does the licensee have in view of 10 CFR Part 50, Appendix E?
16. How much training does the licensee have and specifically, what kind of training is this, e.g., fire, medical effects, hospital? Is it of an orientation nature in the station, tours of the station? Please specify.

B. Cost Questions (To be answered primarily from local and State governments and supplemented where possible by data already supplied to OSP).

1. Has your State furnished NRC with cost data pertaining to Radiological Emergency Response Plans and Preparedness? What additional expenses are incurred for RERP?
2. If your State has furnished NRC with RERP costs, give all the underlying assumptions such as:

Year of dollars _____
Actual costs _____
Forecast costs _____
For a concurred plan _____
For a plan at current status _____
Man-years required _____
3. For those States that have not given NRC cost data, furnish the following in as much detail as possible for the State and the local governments (breakdown by facility):

Initial costs

Emergency Plan development _____

Radiological preparedness resources _____

Training response personnel _____

Other _____

Recurring costs (annual basis)

Exercising _____

Plan updating _____

Radiological preparedness resources _____

Retraining of personnel _____

Other _____

4. For those States that have given cost data to NRC, supplement where possible the cost estimates following the same breakdown shown in question 3.

5. Is there any economy of scale in costs within the State and County as each new facility is added? Explain.

6. What would be the incremental cost to implement the recommendations of the Task Force in NUREG-0396, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants?" (Draft 2, July 1978)

a. A single Protective Action Zone of about 10 miles in radius (plume exposure pathway). This includes what is already in place. What would be required in terms of evacuation and training? Would the costs be monumental, small, etc.?

b. A protective Action Zone of about 50 miles in radius (ingestion exposure pathways, agricultural, water and milk pathways). This would include items involved in planning like identifying the agricultural products, agricultural areas, food processing, survey of dairy lands, crops, and water shed. The operational costs for implementation (equipment, radiological instruments, identification of people).

C. Funding Questions (To be answered primarily from local and State governments).

1. How are the State and local plans and emergency preparedness in general financed? (Consider that financing involves joint actions.)

Appropriations from general tax revenues:

State _____

Local _____

Sales tax on electricity:

State _____

Local _____

Property tax on the facility:

State _____

Local _____

Defense Civil Preparedness Agency (Personnel and Administrative Funds):

State _____

Local _____

Federal Disaster Assistance Administration Grants (P.L. 93-288):

State _____

Local _____

Other:

State _____

Local _____

2. Has your State or local government received any financial assistance or other kind of resources from utilities? _____
If so, what? _____

3. What do State and local communities do with any funds that are received from the utilities' nuclear power station or other nuclear facility? Could some of these funds be used for RERP?

State _____

Local _____

4. In your opinion, based on the options in question 1, what is the best way to finance the State and local plans and preparedness? (Support your opinions by writing up any thoughts on the subject and sending it to the Office of State Programs.)
5. How could the State and local governments benefit from any extra funds in order to improve planning and preparedness?
6. What economic assistance can local communities expect in the future from:

Licenses _____

States _____

Federal agencies _____

Local governments _____

7. What obstacles must be removed in order to receive these funds?
8. In view of the taxpayers' revolt (e.g., Proposition 13 in California) what is the near-term and long-term financing future for RERP?
9. What kind of budget process is used to allocate limited funds for RERP? Explain how it is used.

Zero-base budgeting (ZBB) _____

Planning, programming and budgeting system (PPBS) _____

Management by objective (MBO) _____

Other _____

10. Are there any State or local laws enacted or in draft form relating to the financing ability of State and/or local governments for RERP and related activities?

APPENDIX B

Concurrence

Under terms of the Federal Preparedness Agency's Federal Register Notice,¹ the NRC is responsible for reviewing and concurring in the State and local radiological emergency response plans. This review and concurrence process is conducted in a voluntary, cooperative atmosphere, since neither the NRC nor any other Federal agency has statutory authority to require States to develop radiological emergency plans. Concurrence is used in the connotation of reviewing, commenting upon, and agreeing with the plan rather than in the context of "approving" such plans.

During the preparation of the 1973 and 1975 versions of the Federal Register Notice which sets up the voluntary/ Federal Interagency Radiological Emergency Preparedness program with the States and local governments, some thought was originally given to using the words "review and approval" of State and local plans. The word "approval" was rejected by the involved Federal agencies since there was no authority to require these plans of the States and local governments. The word "concurrence" was chosen because it is a softer word meaning according to Webster: "To act together to a common end; an agreement of union in action; cooperating in doing good; a meeting of minds; an agreement in opinion; a union in design; a meeting or coming together." It implies a spirit of cooperation and harmony between parties. It is in this cooperative light that NRC views the emergency planning concurrence process with the State and local governments.

Plan reviews are performed through existing Federal Interagency Regional Advisory Committees. The review is conducted in terms of identifying and analyzing "acceptable" or "unacceptable" elements. Typically, there are four levels of evaluation on which this acceptability is judged: (1) the element is missing entirely; (2) has serious technical deficiencies; (3) the element is acceptable but, in the opinion of the reviewer, improvements could be made; or (4) the element is satisfactory and, in the opinion of the reviewer; no constructive criticism can be made (no obvious improvements can be made). For concurrence, the 70 "essential" elements² must be in the third or fourth category.

¹ "Radiological Incident Emergency Response Planning: Fixed Facilities and Transportation," Interagency Responsibilities, Federal Register, Vol. 40, No. 248 - Wednesday, December 24, 1975, pp. 59494-59495.

² "NRC Office of State Programs Standards and Procedures for concurrence in State and Local Government Radiological Emergency Response Plans," Office of State Programs, Supplement No. 1 to NUREG-75/111, March 15, 1977. Available from the Office of State Programs, NRC.

It is obvious that in the above reviews the opinion of the reviewer may be subject to disagreement, since in many cases the analysis is of necessity subjective. Therefore, if there are unresolvable issues, the Office of State Programs will meet with State and Federal agency representatives to resolve them on a case-by-case basis. The Regional Advisory Committee will recommend concurrence to the NRC Office of State Programs when, in their view, a plan satisfies all of the essential elements and appears to be functional in its application. Once the Office of State Programs makes a finding that the essential elements are present in a plan, the other interested Federal agencies will be given five days notice and opportunity to comment before the formal NRC concurrence letter is issued.

It is expected that the plans will be tested and updated on an annual basis to ensure that they are operable and practical. In the event a plan becomes substandard through inadequate tests and updating, the NRC reserves the right to withdraw its concurrence.

States with Concurred-in Plans

	<u>Original Plan Date</u>	<u>Concurrence Date</u>
Alabama	2/16/78	2/9/79
Arkansas	5/78	5/3/79
California	8/78	8/15/78
Connecticut	3/77	12/21/77
Delaware	6/6/78	7/24/78
Florida	6/78	8/4/78
Iowa	6/30/78	2/27/79
Kansas	8/78	9/19/78
Nebraska	7/79	9/21/79
New Jersey	8/77	9/30/77
New York	12/78	1/23/79
South Carolina	9/77	11/23/77
Virginia	10/79	10/ /79
Washington	5/76	3/29/77

APPENDIX C

National Cost Model for State and Local Government Radiological Emergency Response Plans and Preparedness in Support of Commercial Nuclear Power Stations

The objective of this appendix is to estimate the national costs to State and local governments for radiological emergency response plans and preparedness for commercial nuclear power stations over the time frame 1980-2000. National costs are estimated for the following:

- achieving NRC concurrence for all impacted State and local governments;
- implementing the Emergency Planning Zones (EPZ) concept for most sites; and
- enhancing plans and preparedness by using Atmospheric Release Advisory Capability (ARAC) and ring systems.

A summary is presented.

Achievement of NRC Concurrence for all Impacted State and Local Governments

The time schedule for State and local government plans and preparedness is indicated in Table C-1. All commercial nuclear power stations in operation or forecast to be in operation by the end of 1979 are listed by State. Contiguous States to States with operating stations are listed and flagged. For years beyond 1979, stations are listed under the year of the forecast fuel loading date except for a small number of cases where the estimate is based on Construction Permit forecasts combined with forecasts of construction duration. The year 1990 is assumed for stations marked by an asterisk.

There are 25 States with operating nuclear power stations as of May 31, 1979 as shown in Table C-2. Six States are contiguous to these 25 States as shown in Table C-3. The criterion for selection is 10 miles from the nuclear power station. An additional 3 States are forecast to have operating nuclear power stations and two additional contiguous States by the end of 1980 as shown in Tables C-4 and C-5. Thirty-six States require concurrence by the end of 1980.

Typically, a State is estimated to incur the following costs for concurrence as described in Chapter 4:

Plan

Initial	\$50,000
Update	5,000

Preparedness

• Exercises	\$10,000 per year
• Training	
Initial	\$10,000
Update	2,000 per year
• Resources	
Initial	\$100,000
Update	10,000 per year

Initial costs for the plan, exercise, training and resources total \$170,000. Annual updating costs total \$27,000. Based on the above initial and annual costs, the initial cost for the 36 States is \$6.1 million, and the annual cost is \$970,000.

Three additional States are forecast to require concurrence by 1982 and one by 1987 as shown in Tables C-6 and C-7. No other States, beyond the 40 listed in the tables, should require concurrence through the year 2000 since no site in another State has been identified as of May 31, 1979. It seems unlikely that the remaining 10 States will be affected based on economic, resource, population and other considerations.

The present value costs to State governments for the time frame 1980-2000 is calculated from the initial and annual costs per State and the timing requirements given in the tables. A discount rate of 10 percent is used following the guidance of the Office of Management and Budget, Circular No. A-94, Revised, March 27, 1972. Ten percent is the recommended discount rate for evaluating government projects. No adjustment is made for inflation since it cannot be forecast for this work. Costs are expressed in 1978 dollars.

The national present value cost to States is calculated from the following formula:

$$\text{National Present Value Cost to States} = 39 C_I + 330 C_A, \quad (1)$$

where C_I = initial cost per State and C_A = annual cost per State. The coefficients represent single and uniform payment present value factors for the appropriate year combined with the number of States. For NRC concurrence, where C_I = \$170,000 per State and C_A = \$27,000 per State, the national present value cost is \$16 million.

The national costs for local governments for plans and preparedness are estimated with the help of the time schedule in Table C-1. No new sites beyond 1990 are identified. The growth in nuclear generating capacity for the time frame 1990-2000 is assumed to occur by adding units to existing sites instead of creating new ones. (See Ref. 1).

There are 53 sites in operation in 1979 as shown in Table C-1. Five more stations become operational in 1980. A considerably smaller number of sites require plans and preparedness on a yearly basis from 1980 through 1990. The total number of sites is 101 for the time frame 1979-2000.

Typically, local government costs involve two jurisdictions per site as described in Chapter 4. The costs are:

Plans	
Initial	\$20,000
Update	2,000 per year
Preparedness	
• Exercises	\$10,000 per year
• Training	None
• Resources	
Initial	\$30,000
Update	3,000 per year

Initial costs for the plans, exercise, training and resources total \$60,000. Annual updating costs total \$15,000.

Based on the above initial and annual costs, for the 58 stations for 1979-1980, the initial costs total \$3.5 million and the annual costs total \$870,000.

The national present value costs to local governments for the time frame 1980-2000 is calculated from the initial and annual costs per site and the timing requirements given in Table C-1. A 10 percent discount rate is used. This cost is expressed in the following formula:

$$\text{National Present Value Cost to Local Government} = 87 c_i + 720 c_a, \quad (2)$$

where c_i = initial cost to local governments per site and c_a = annual cost to local governments per site. For NRC concurrence, c_i = \$60,000 and c_a = \$15,000. On this basis, national present value costs to local governments is \$16 million. The combined national present value cost to State and local governments is \$32 million.

Implementing the Emergency Planning Zones (EPZ) Concept for Most Sites

The national costs to State governments for implementing the Emergency Planning Zones (EPZ) concept is calculated in a similar matter as described above. These costs are considered as upper limit bounds and include NRC concurrence costs as shown above.

A typical State is estimated to incur the following costs as described in Chapter 5:

Plan	
Initial	\$100,000
Update	10,000 per year
Preparedness	
• Exercises	\$20,000 per year
• Training	
Initial	\$20,000
Update	4,000 per year
• Resources	
Initial	\$100,000
Update	10,000 per year

Initial costs for the plan, exercise, training and resources total \$240,000. Annual updating costs total \$44,000.

For the national present value cost to State governments, formula (1) is used where $C_I = \$240,000$ and $C_A = \$44,000$. The national present value cost to State governments is estimated accordingly to be \$24 million.

For a typical site, local governments involve four jurisdictions and are estimated to incur the following costs as described in Chapter 5:

Plan	
Initial	\$40,000
Update	4,000
Preparedness	
• Exercises	\$20,000 per year
• Training	None
• Resources	
Initial	\$60,000
Update	6,000 per year

These costs do not reflect the entire costs for the 21 high population density (and growth) sites described in Chapter 5. Initial costs for the plan, exercise, training and resources total \$120,000. Annual updating costs total \$30,000.

For the national present value cost to local governments, formula (2) is used where $c_i = \$120,000$ and $c_a = \$30,000$. The national present value cost to local governments is estimated accordingly to be \$32 million. The combined national present value cost to State and local governments is \$56 million. [The present value cost for the 21 high population density (and growth) sites is estimated at \$8 million.]

Enhancement of Plans and Preparedness by Using Atmospheric Release Advisory Capability (ARAC) and Ring Systems

The addition of the Atmospheric Release Advisory Capability (ARAC) or the ring system enhances plans and preparedness for State and local government as described in Chapter 4. The initial cost per site is estimated at \$100,000. Operation and maintenance costs are estimated at \$10,000 per year. The national present value cost to State and local governments is estimated by using formula (2) with $c_i = \$100,000$ and $c_a = \$10,000$. As a result, the national present value cost to State and local governments for ARAC or ring systems is \$16 million.

Summary

The following table summarizes the above national present value costs (millions of dollars):

Total = NRC Concurrence + EPZ* + ARAC or Ring System + High Population Density (and Growth) Sites

State Government	16	8					
Local Government	16	16	}16			}8	
Total:	80 =	32	+	24	+	16	+ 8

*The incremental cost for EPZs.

Reference

1. "A Siting Policy for an Acceptable Nuclear Future," C. C. Burwell, M. J. Ohanian, and A. M. Weinberg, Science, Vol. 204, June 8, 1979, pp. 1043-1051.

TABLE C-1. TIME SCHEDULE FOR STATE AND LOCAL GOVERNMENT RADIOLOGICAL EMERGENCY RESPONSE PLANS AND PREPAREDNESS IN SUPPORT OF COMMERCIAL NUCLEAR POWER STATIONS.

STATE	YEAR											
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
1. Alabama	Browns Ferry Farley		Bellefonte									
2. Arkansas	Arkansas											
3. Arizona				Palo Verde								
4. California	Humboldt Bay Rancho Seco San Onofre Diablo Canyon											Stanislaus*
5. Colorado	Fort St. Vrain											
6. Conn.	Haddam Neck Millstone											
7. Delaware	Salem (NJ)											
8. Florida	St. Lucie Turkey Point Crystal River											
9. Georgia	Hatch					Vogtle						
10. Illinois	Dresden Quad Cities Zion LaSalle			Braidwood Byron Clinton								Carroll*
11. Indiana				Marble Hill Bailley								
12. Iowa	Duane Arnold											
13. Kansas				Wolf Creek								
14. Kentucky		Zimmer (OH)										
15. Louisiana			Waterford			River Bend						
16. Maine	Maine Yankee											
17. Maryland	Calvert Cliffs											
18. Mass.	Pilgrim Yankee Rowe										Montague*	

C-6

TABLE C-1 (Continued)

STATE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
19. Michigan	Palisades Big Rock Point Cook	Midland	Ferri									Greenwood*
20. Minnesota	Monticello Prairie Island											
21. Mississippi		Grand Gulf										
22. Missouri				Callaway								
23. Nebraska	Cooper Ft. Calhoun											
24. New Jersey	Oyster Creek Salem											
25. New Hampshire					Seabrook							
26. New York	FitzPatrick Ginna Indian Point					Shoreham			Sterling		New Haven	Jamesport*
27. North Carolina	Brunswick McGuire				Harris			Perkins				
28. Ohio	Davis Besse Zimmer				Perry						Erie	
29. Oklahoma					Black Fox							
30. Oregon	Trojan								Pebble Springs			
31. Pennsyl- vania	Beaver Valley Peach Bottom Three Mile Island	Susquehanna			Limerick							
32. Rhode Island									New England			
33. South Carolina	Oconee Robinson	Summer	Catawba				Cherokee					
34. Tennessee	Sequoyah Watts Bar				Hartsville	Phipps Bend						

TABLE C-1 (Continued)

STATE	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
35. Texas		Commanche Peak	South Texas						Allens Creek			
36. Vermont	Vermont Yankee											
37. Virginia	North Anna Surry											Central Virginia*
38. Washington	Trojan (OR)		WNP			Grays Harbor			Skagit			
39. West Virginia	Beaver Valley (PA)											
40. Wisconsin	Kewaunee Point Beach LaCrosse						Tyrone		Haven			
Totals:	53	5	6	11	4	6	1	1	6	0	2	6 101 sites

C-1

Note: Nine Mile Point is considered to be on the FitzPatrick site.
 Hope Creek is considered to be on the Salem site.
 Forked River is considered to be on the Oyster Creek site.
 Clinch River is not listed.

*These stations are assumed to load fuel in 1990.

Sources: U.S. Nuclear Regulatory Commission, Program Summary Report, NUREG-0380, Volume 3, No. 6, June 15, 1979.
 U.S. Nuclear Regulatory Commission and U.S. Department of Energy, Construction Status Report - Nuclear Power Plants, Data as of April 30, 1979, NUREG-0030, Vol. II, No. 2, May 1979.
 U.S. Nuclear Regulatory Commission, Regulatory Licensing, Status Summary Report - Data for Decisions, Vol. 8, No. 3, May 4, 1979.

TABLE C-2. STATES WITH OPERATING COMMERCIAL NUCLEAR POWER STATIONS
(as of May 31, 1979)

1. Alabama	11. Maryland	21. Pennsylvania
2. Arkansas	12. Massachusetts	22. South Carolina
3. California	13. Michigan	23. Vermont
4. Colorado	14. Minnesota	24. Virginia
5. Connecticut	15. Nebraska	25. Wisconsin
6. Florida	16. New Jersey	
7. Georgia	17. New York	
8. Illinois	18. North Carolina	
9. Iowa	19. Ohio	
10. Maine	20. Oregon	

TABLE C-3. CONTIGUOUS STATES TO STATES WITH OPERATING COMMERCIAL NUCLEAR POWER STATIONS
(as of May 31, 1979)

1. Delaware	4. New Hampshire
2. Kansas	5. Washington
3. Missouri	6. West Virginia

Note: Criterion for selection is 10 miles from the nuclear power station.

TABLE C-4. ADDITIONAL STATES FORECAST TO HAVE OPERATING COMMERCIAL NUCLEAR POWER STATIONS
BY THE END OF 1980 (Not listed in Tables C-1 or C-2)

1. Mississippi
2. Tennessee
3. Texas

TABLE C-5. ADDITIONAL CONTIGUOUS STATES TO STATES WITH NUCLEAR POWER STATIONS FORECAST
FOR OPERATION BY THE END OF 1980

1. Kentucky
2. Louisiana

TABLE C-6. ADDITIONAL STATES FORECAST TO HAVE OPERATING COMMERCIAL NUCLEAR POWER STATIONS
BY THE END OF 1982

1. Arizona
2. Indiana
3. Oklahoma

TABLE C-7. ADDITIONAL STATE FORECAST TO HAVE AN OPERATING COMMERCIAL NUCLEAR POWER
BY THE END OF 1987

1. Rhode Island

Sources: U.S. Nuclear Regulatory Commission, Program Summary Report, NUREG-0380, Volume 3, No. 6, June 15, 1979.
U.S. Nuclear Regulatory Commission and U.S. Department of Energy, Construction Status Report - Nuclear Power Plants, Data as of April 30, 1979, NUREG-0030, Vol. II, No. 2, May 1979.
U.S. Nuclear Regulatory Commission, Regulatory Licensing, Status Summary Report - Data for Decisions, Vol. 8, No. 3, May 4, 1979.

APPENDIX D

Atmospheric Release Advisory Capability

The primary objective of the Atmospheric Release Advisory Capability (ARAC) is to provide timely technical advice to government decisionmakers. ARAC is a service developed at the Lawrence Livermore Laboratory (LLL), Livermore, California, by the U.S. Department of Energy. This service is a real-time capability to predict accurately and swiftly the effects on the population and the environment of an accidental release of radionuclides from a nuclear power station. ARAC uses data from radiological sensors on the site of the nuclear power station, meteorological inputs (both onsite and offsite), a centralized computer (which could be at Livermore or at any State capital), and an onsite small computer in order to make a variety of calculations and dose projections. The predicted atmospheric diffusion of the plume of released radioactive material, which is influenced by local and regional meteorological and topographical conditions, is calculated by a set of complex regional atmospheric transport and diffusion computer codes and models. As currently envisioned by a number of planners, the local and/or regional concentration pattern is translated immediately into predicted exposure rate and dose projection patterns. This information becomes available to local, State and Federal (e.g., NRC and FEMA) officials, in addition to the utility operating the nuclear power station, for emergency protection action decisionmaking, such as evacuation or sheltering recommendations to the impacted population nearby the site.

ARAC produces two levels of advisory information. Level-1 is an early forecast of significance out to about 3 to 6 miles from the nuclear power station site. The information is available within 3 to 5 minutes after receipt of input data. Level-2 advisories are calculated by the use of validated state-of-the-art numerical modeling techniques appropriate for the magnitude of the problem, the complexity of the meteorology and topography, and the availability of input data. Level-2 advisories may consist of predicted concentration patterns, estimated exposure-rate patterns, dose projections, and predicted ingestion pathway concentrations. This information is expected to be available within 30 to 40 minutes after the receipt of input data. All of the advisory information should be shared among local, State, Federal and operating utility officials in order to supply a common data base for the coordination of emergency action decisionmaking. Sharing can easily be accomplished by means of a 5-way party telephone line. Dedicated lines are preferable.

ARAC offers a tool for the most comprehensive planning, exercising, response, and recovery operations compared to other tools presently available. Since its inception in 1973, ARAC has been activated on numerous occasions. In addition to routine tests of the system's capabilities and the generation of scenarios for periodic tests of site emergency preparedness procedures, ARAC has been involved in analyzing various actual or potential radioactive releases. These include the COSMOS 954 reentry and the Fort St. Vrain release in 1978, and the Three Mile Island accident in 1979.

Currently, NRC is funding a feasibility study that incorporates ARAC services into emergency response plans and programs of the Rancho Seco Nuclear Power Station. This study involves the operator of Rancho Seco, the Sacramento Municipal Utility District, the Sacramento County Office of Emergency Operations and the State of California Office of Emergency Services.

Other applications of ARAC include the periodic assessment of normal operating releases from facilities, such as LLL, Rocky Flats Plant in Golden, Colorado, and the Savannah River Plant in Aiken, South Carolina. ARAC could also be used for accidental atmospheric releases of toxic materials from chemical plants.

References

1. "ARAC Feasibility Study for the NRC, Phase I: Final Report," Leonard C. Rosen and Richard C. Orphan, Lawrence Livermore Laboratory, March 1979. Available from NRC.
2. "Atmospheric Release Advisory Capability (ARAC): Development and Plans for Implementation," Marvin H. Dickerson and Richard C. Orphan, Lawrence Livermore Laboratory, UCRL-51839, June 5, 1975. Available from NTIS.
3. "A Concept for an Atmospheric Release Advisory Capability," M. H. Dickerson, J. B. Knox, J. J. Cohen, and R. C. Orphan, Lawrence Livermore Laboratory, UCRL-51656, October 2, 1974. Available from NTIS.

APPENDIX E

Comment Letters

The draft report was completed on Tuesday, March 27, 1979, the day before the accident at Three Mile Island Nuclear Power Station - Unit 2, near Harrisburg, Pennsylvania. No changes were made in the draft report as a result of the accident on the assumption that any changes would be premature and that a baseline study would be most useful. Accordingly, the printing schedule for March 30, 1979 was not interrupted.

In view of the accident and related events at Three Mile Island, timely review of the draft report was requested from a number of parties:

- . Office Directors, U.S. Nuclear Regulatory Commission;
- . Federal Interagency Central Coordinating Committee (Radiological Emergency Preparedness);
- . Interorganizational Advisory Committee on Radiological Emergency Response Planning and Preparedness of the Conference of (State) Radiation Control Program Directors;
- . Mr. Gordon Vickery, Acting Director, U.S. Federal Emergency Management Agency (FEMA);
- . Mr. J. Dexter Peach, Director, Energy and Minerals Division, U.S. General Accounting Office;
- . All State and local governments participating in the study;
- . Various government associations;
- . Utility industry;
- . Public interest groups; and
- . Anyone requesting a copy.

Altogether, almost 400 copies were distributed.

The written comments received are displayed in Exhibit A. Some commenters telephoned their comments and are not included here. The final report attempts to revise, clarify, resolve and highlight the issues of most concern to the commenters. The principal issues of the commenters are highlighted below.

PRINCIPAL ISSUES

The principal issues fall into three categories, costs, funding and administration. They are summarized below and addressed in the text at the appropriate location.

Costs

1. The cost projections seem too high.
2. The costs presented may increase because of the Three Mile Island accident.
3. There is an impact on costs to States from the early Federal participation in monitoring, etc. and the interface with the Interagency Radiological Assistance Plan (IRAP).
4. There seems to be insufficient information supporting the cost estimates that are provided.
5. The draft report is premature in dealing with monetary concerns because the Commission has not yet provided guidance with respect to emergency planning.
6. The calculations for total costs for States and local governments give no consideration to the fact that several States already have plans with NRC concurrence.
7. The discrepancy in salary between local government officials and the \$20,000 minimum yearly salary for local Civil Defense/Emergency Services directors is too great and causes local political problems.

Funding

1. The principle of recovery of all Federal, State and local government costs by imposing a fee on the utility should be the keystone of any funding proposal.
2. Financial participation on the part of the States is needed to encourage other kinds of participation on the part of the State as well.
3. The grant program may not be the best way to accomplish Federal funding.
4. The interim use of funds derived from existing fees for Construction Permits and Operating Licensees should be considered.
5. The rationale for diverting \$15 million from NRC's Light Water Reactor (LWR) safety research program to fund State and local radiological emergency response plans and preparedness for high risk sites (high population density and growth sites) is not well developed.

Administration

1. An effective administration structure must be addressed.
2. Funding State and local government plans and preparedness with money from utilities without being funneled through the Federal government should be explored.
3. Congressional and Executive Branch approval of budget requests for State and local government funding is necessary in the proposed mechanism.
4. The possible effect of the recommendation that all State and local government plans must have NRC concurrence before NRC grants an Operating License might enable any State or local government to defer or prevent the operation of a nuclear power station.
5. Areas that have no Civil Defense/Emergency Services director to coordinate planning is a problem that is difficult to resolve.
6. The usefulness of 10 NRC consultants on loan to State and local government is questioned.

Comment Letters

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Federal Interagency Central Coordinating Committee

Department of
Defense

Defense Civil
Preparedness Agency



DEFENSE CIVIL PREPAREDNESS AGENCY
WASHINGTON, D.C. 20301

MAY 9 - 1979

Mr. Robert G. Ryan, Director
Office of State Programs
Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Ryan:

Your letter of April 10, 1979 to Mr. Gordon Vickery, Acting Director, Federal Emergency Management Agency, enclosing copies of the draft report, "Beyond Defense-in-Depth: Cost and Funding of State and Local Government Radiological Emergency Response Plans and Preparedness in Support of Commercial Nuclear Power Stations," has been forwarded to this office for reply.

As stated on page 1, the report was completed before the Three Mile Island Nuclear Power Station incident which started on March 28, 1979. This incident has given us some new insights concerning planning for the protection of the populace near such stations. Already there is more attention being given to this type planning and there are indications that a great deal more will be done in the future. This trend may mean that the costs presented on page I-1 will increase.

We believe that State and local governments need the help of Federal agencies in the development of these plans. DCPA assistance during the Three Mile Island incident in helping host communities prepare to receive relocatees from risk areas was deeply appreciated, and most local officials recommend that we provide more of this kind of assistance in future emergencies. In this regard Radiological Emergency Response Planning (RERP) assistance for State and local governments appears to fall under the responsibilities of the Federal Emergency Management Agency (FEMA). Of course, technical assistance will be required from the Nuclear Regulatory Commission, Environmental Protection Agency and others.

The report is very comprehensive. Problems involved in RERP are well documented. The cost tables will be of great help in future work; however, some of the problems such as the areas that have no civil defense director to coordinate planning are going to be difficult to overcome.

Part I, Executive Summary, is a little misleading in regard to page I-1, paragraph 2, on the \$40 million for the FEMA personnel and administration funding of local government at 100 percent support and page I-2, paragraph 4 on the same subject. Page II-91, paragraph 5, and Page II-111,

2.

paragraph 1 indicate the problem. DCPA is restricted by law from exceeding 50 percent matching funds support for Personnel and Administrative expenses. Therefore, new legislation would be required to support local governments in the emergency planning zone (EPZ) at either the 100 percent level or the 75 percent level.

On page II-61, paragraph 2, the assumption that no costs are assigned to instrumentation is not valid. The Brookhaven project does not involve "modification" of civil defense instruments but rather using standard instruments with auxiliary air sampling equipment which must be procured. As a result, there may be substantial costs associated with instrumentation.

In addition to the training mentioned in this study, there is need for a basic manual to guide and assist State and local officials, written in non-technical terms and covering the basics of operational planning, capability development, evacuation concept, shelter, warning and communications, and public information matters. Basic information on the threat and measures to protect the public would also be included in addition to use of civil defense detection equipment, emergency protective measures and operational readiness criteria.

Other than the shortcomings mentioned above, we believe that this report will be helpful in determining more effective ways to develop preparedness plans for nuclear power plant locations.

Sincerely,

Bardyl R. Tirana
Director

**Department of Housing and
Urban Development**

**Federal Disaster Assistance
Administration**



DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
FEDERAL DISASTER ASSISTANCE ADMINISTRATION
WASHINGTON, D.C. 20410

OFFICE OF THE ADMINISTRATOR

May 10, 1979

IN REPLY REFER TO:

Mr. Robert G. Ryan
Director
Office of State Programs
Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Ryan:

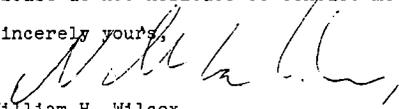
This Agency, as requested, has reviewed the draft report NUREG-0553 on RERF funding. We favor most of its recommendations and are prepared to support NRC as appropriate.

There are, however, some questions that could be raised with respect to the financial proposals contained in the report. For example, it has been our experience that State financial participation tends to encourage other kinds of participation on the part of the States as well. Contrary-wise when there is "no money on the barrelhead," there is not likely to be any other kind of commitment, either.

A central issue from our point of view not addressed by the study is that of achieving an effective administrative structure. The expenditure of more taxpayers, or ratepayers', dollars will not necessarily assure an improved radiological response capability. Adequate funds, combined with commitment and adequate administrative organization, should be called for. The attached testimony which I gave before the Presidential Commission on Three-Mile Island, particularly the latter portion, suggests one way of assuring that we get something more than just more movement of papers and documents from the expenditure of more dollars.

If you would like to discuss this with me further at any point, please do not hesitate to contact me.

Sincerely yours,


William H. Wilcox
Administrator

Attachment

STATEMENT BY
WILLIAM H. WILCOX, ADMINISTRATOR
FEDERAL DISASTER ASSISTANCE ADMINISTRATION
BEFORE THE
PRESIDENT'S COMMISSION ON THE ACCIDENT AT
THREE MILE ISLAND

APRIL 26, 1979

A public T.V. program on Three-Mile Island Monday night reported that there are now known to be underway nine different investigations of one aspect or another of the TMI incident. There will come from these investigations and the specialized studies to follow a mass of findings and recommendations covering sociological, scientific, legal, economic and mental and physical health aspects of TMI. Within a few years, the people of metropolitan Harrisburg, Pennsylvania, may be the most studied people in the world. No doubt they will have long since tired of it!

A Presidential Commission has an opportunity to stand above this and review the overall policy perspective. I hope you will present to President Carter no more than a half dozen clear and simple major policy findings and recommendations, supported by such extensive documentation as may be required.

In fact, the six functions assigned to the Commission by President Carter provides primarily the foundation needed for addressing the broad issues the March - April radiological incident at TMI raises. This testimony deals largely with the issue of preparedness raised by (C) in the Commission's charter.

Governor Thornburgh has said he's now ready for the second guessers. Let me say that I was not present at Three Mile Island like my two companions and advisors here this morning -- Mr. Robert Adamcik, Regional Director

of Region III, Philadelphia, Federal Disaster Assistance Administration and Mr. John McConnell of the Defense Civil Preparedness Agency of the Department of Defense. I have, however, had considerable experience with emergency management both as Secretary of Community Affairs in Pennsylvania for six and one-half years and as Administrator of the Federal Disaster Assistance Administration for the last 15 months. During the TMI crisis days I personally directed the FDAA Operation Center which, at the direction of the White House, served as a bridge between the Nuclear Regulatory Commission (NRC) and most of the other Federal agencies providing support. For 10 days we provided a daily report on Federal activities to Jack Watson. Mr. Adamcik coordinated non-scientific Federal operations in Harrisburg. Mr. McConnell provided critical technical assistance to the State and counties in planning for possible evacuation.

While we propose to avoid the invidious implications of second guessers, some preparedness lessons, perhaps also applicable to other places and times, now appear evident from the TMI emergency. I respectfully suggest the following initial findings which can be subject to later verification. I certainly would be prepared to defend them here under questioning:

1. The Nuclear Regulatory Commission lacks both the carrot (dollars) or the stick (authority) to encourage adequate state and local governmental preparedness for

radiological accidents?

2. Many of the assurances provided by public agencies to the Metropolitan Edison as to available resources in the case of a radiological incident at TMI were so much bureaucratic boilerplate and were not always relevant to actual capability.

3. Annex E, Nuclear Incidents (Fixed Facility) of the Commonwealth of Pennsylvania Disaster Operations Plan is so vague as to be of little value.

4. The pre-emergency coordination between county civil defense organizations was weak and inadequate.

5. The area and population contemplated for evacuation was much greater in actuality than that provided for in the pre-emergency plans.

6. Responsible Federal agencies have not given sufficient priority to the prompt review of State Radiological Emergency Response Plans.

I respectfully suggest that pre-emergency planning and readiness requires coordination, cooperation and communication. The need for these 3 C's in other types of community and area planning, such as highway planning, economic development and health and hospital planning, has been demonstrated by experience decades ago and TMI may well have demonstrated the need for this type of planning and readiness structure in emergency operations, too. While the Federal Government must be sensitive to state and local laws and customs, it should, in my view, set the framework requirements for a

specialized, regionalized coordinated emergency response structure, designed in the detail by the state's governor or legislature. The creation and effective planning by such a governmental or quasi-governmental agency should be a prerequisite for a licensee to operate a new nuclear power plant and should be required, after a reasonable time span, of existing plants as a condition for continued operation. Among the agencies which would be represented on the policy-making body would be the NRC and/or the Federal Emergency Management Agency (FEMA), the State Bureau of Radiological Health, the State emergency officer, the county, city or town executives on governing bodies and the licensee.

With respect to either emergency planning or operations no advisory commission can compel effective plans and readiness. The Commission, however, can suggest a structure that will encourage coordination, cooperation, and communication. What I have proposed here will, in my view, do just that.



General
Services
Administration

Federal
Preparedness
Agency

Washington, DC 20405

MAY 14 1979

Mr. Robert G. Ryan, Director
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Ryan:

Thank you for asking James Thomas to comment on your draft report "Cost and Funding of State and Local Government Radiological Emergency Response Plans and Preparedness in Support of Commercial Nuclear Power Stations."

Although the draft report is quite detailed, it is silent on several points which might well be discussed. First, the report recommends increased licensing fees as a method of funding State and local planning. This change would require legislation which may take some time. Consequently, this report should also discuss the feasibility of using, at least on an interim basis, funds derived from existing fees for construction permits and operating licenses.

Second, the report should consider the possible effect of the recommendation that all State and local government plans must have NRC concurrence before NRC grants an operating license. Such a requirement would enable any State or local government to defer or prevent the operation of a power plant. With the current level of public opposition to nuclear power, a public utility would be extremely reluctant to undertake construction of a nuclear power plant when faced with the possibility that just one local government could prevent the operation of that facility. In addition, if such a prerequisite were imposed, would it be retroactive to a power plant now in operation? If a local or State government failed to develop an acceptable plan, would NRC be prepared to withdraw its operating permit even if the power plant(s) was needed to prevent power shortages?

Third, the entire report appears to be based on the assumption that there are no reasonable alternatives to 100 percent Federal funding of State and local radiological emergency response planning. If the report does, in fact, make such an assumption, we have some trouble with it. State and local governments still have primary responsibility for the safety of the people. However, the feasibility of using

2

money from public utilities to fund local planning, without being funneled through the Federal Government, should be discussed in this paper.

The calculations used to arrive at estimated costs of developing the required plans appear to overlook several factors which could substantially reduce these costs. For example, the draft report recommends training for two sets of State survey teams (page II-61) to permit relief of these teams every 12 hours. However, no mention is made of Federal monitoring teams which would certainly be on the scene within a few hours. Likewise, the calculations of total costs for State and local governments (pages II-70 & 71) gives no consideration to the fact that several states already have plans with NRC concurrence. In addition, many of the 65 power plants which will be coming on line in the future will not require a full scale planning effort since they will be located on the same site with existing plants.

In summary, the material presented in this report provides considerable background data useful in future decision-making. However, as we have observed above, you may wish to review and refine some of the ideas and cost estimates contained in this report.

Sincerely,

Arnold C. Lewis
Acting Chief
Resources Management Division

**Environmental
Protection Agency**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D.C. 20460

May 24, 1979

Mr. Robert G. Ryan
Chairman, Federal Interagency Central
Coordinating Committee (RERP)
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Bob:

Thank you for the opportunity to review and comment on "Beyond Defense-in-Depth," NUREG-0553. This is an excellent and valuable reference for our growing library of emergency response planning documents. The estimated costs for the preparation of emergency plans is useful information in assessing the cost effectiveness aspects of deriving Protective Action Guides since these costs, on a continuing basis, can become very substantial.

I believe we should further explore the concept of requiring NRC "approved" State and local emergency response plans as a condition of licensing and operation of nuclear power plants. As I understand the situation, this would require new legislation. Also, NRC's present concurrence mechanism may need to be reevaluated to make the concurrence activity more meaningful. The current concurrence procedures basically approve a State radiological emergency response plan (i.e., a piece of paper), but, until very recently, had no requirement that the plan be tested prior to concurrence. I understand from NRC's 1978 annual report that successful testing of plans has very recently been incorporated as a condition prior to issuing concurrence. Although this is a step in the right direction, it does not, in all cases, guarantee that local plans have been coordinated with and integrated in the State plan, nor that these local plans can be successfully tested. Participation of local authorities in the overall State plan is, in my opinion, essential to successful implementation of the overall plan. It may be that concurrence needs to be staged in phases, i.e., (1) the plan, (2) testing, and (3) periodic retestings. Perhaps we could get together soon to discuss our views on the development of local plans and the integrated testing of State plans with utility and local governmental plans.

2

It is clear that the current hybrid approach to funding emergency response planning is not the answer to the current problems in planning. The recommendation of the draft report that utilities fund State and local planning efforts through increased licensing fees levied by NRC initially appears to be an attractive alternative. Since the report raises this central issue of funding by utilities, I feel that this issue should be addressed separately and be evaluated in light of its advantages and disadvantages before I could completely agree with such an approach.

If you have any questions concerning my comments, please call me.

Sincerely yours,

Floyd L. Galpin
Floyd L. Galpin
Director

Environmental Analysis Division
Office of Radiation Programs (ANR-461)

cc: Harold Collins

**Department of
Transportation**

UNITED STATES GOVERNMENT

Memorandum

DEPARTMENT OF TRANSPORTATION
RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION

DATE: May 22, 1979

SUBJECT: Draft Report - Beyond Defense-in-Depth: Cost and Funding of State and Local Government Radiological Emergency Response Plans and Preparedness in Support of Commercial Nuclear Power Stations, NUREG 0553, March 30, 1979.
FROM: Health Physicist, Office of Hazardous Materials Regulation
Materials Transportation Bureau

*In reply
refer to:*

TO: Robert G. Ryan
Director, Office of State Programs
Nuclear Regulatory Commission

The subject draft report has been reviewed. Although it is directed at fixed nuclear facilities, the objectives for improving capabilities at state and local levels certainly impact capabilities for handling transportation accidents.

The statements on page II-69 understate the differences between the plans and preparedness for power station and transportation emergencies. Several of the significant differences, in addition to unknown location, for transportation emergencies are:

1. Smaller source terms and attendant lower risks;
2. Greater frequency of occurrence of minor consequence incidents that will draw public interest and concern;
3. All state and many local governments within the states need coordinated plans;
4. There is seldom any radiological expertise on the scene until some time after most incidents occur; and
5. Effective plans and preparedness within a state will result in shallow capabilities of broad geographic coverage that can readily draw on in-depth capabilities from strategic locations within the state.

The emergency response system for transportation emergencies must be closely integrated with the system for nuclear power facilities, at least at the top levels in a state. The data in table 13, page II-84, supports the basic position that the early protective actions for

2

transportation radiological emergencies will need to be taken by personnel who have little radiological training but regularly deal with many other emergencies more serious than most transportation radiological emergencies.

In consideration of the "Preferred Approach", page II-115, the revenues to local and state governments derived from the utilities might not be significantly decreased if NRC provided all funding for plans and preparedness from increased fee schedules. This might simply result in further inflation of utility charges to customers. The funds from NRC would free funds within the states for application to transportation plans and preparedness. This might be considered inequitable for the power stations to be essentially funding the transportation plans and preparedness; however, the same revenues also fund schools, parks, welfare, etc. Since all states require plans and preparedness for transportation emergencies for all hazardous materials, it may be more appropriate for FEMA and/or other agencies to develop the programs and administer funding for the transportation radiological emergencies as a component of a broad transportation emergencies system. This would require the agencies to work closely with NRC at state, regional, and local levels, and NRC would exercise the primary guidance for the radiological aspects.

A. Wendell Carriker
A. Wendell Carriker

**Department of
Energy**



MAY 10 1979

Department of Energy
Washington, D.C. 20545

Mr. Robert G. Ryan, Director
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Ryan:

We have reviewed the draft report, "Beyond Defense-In-Depth: Cost and Funding of State and Local Government Radiological Emergency Response Plans and Preparedness in Support of Commercial Nuclear Power Stations, NUREG-0553, March 30, 1979," distributed to the Federal Interagency Central Coordinating Committee.

We have no substantive comments to make on the draft report.

Sincerely,

A handwritten signature in dark ink, appearing to read "L. Joe Deal".

L. Joe Deal, Acting Chief
Environmental Protection and
Public Safety Branch
Division of Operational and
Environmental Safety

Interorganizational Advisory Committee

Colorado Department of Health



COLORADO DEPARTMENT OF HEALTH

4210 EAST 11TH AVENUE DENVER, COLORADO 80220 PHONE 320-8333

May 22, 1979

Robert G. Ryan, Director
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Ryan:

I have reviewed the "Draft Report - Beyond Defense-In-Depth: Cost and Funding of State and Local Government Radiological Emergency Response Plans and Preparedness. In Support of Commercial Nuclear Power Stations NUREG - 0553, March 20, 1979" prepared by Dr. Solomon of your office.

I strongly support the basic philosophy of this study which is advocating financial assistance to state and local governments to develop off-site radiological emergency response plans. It is certainly appropriate to require the nuclear power plant operator to pay for the development of emergency plans meeting NRC concurrence criteria and to issue an operating license only when such a plan has received concurrence following the successful completion of a full scale realistic test exercise. However, in reality, it will not be the utility company that pays for this but the energy consumers who will see the expense passed on to them in the form of higher utility bills.

The use of Federal consultants to work with state and local planners may have some merit but only under the following conditions:

- 1) The consultants must be technically experienced in emergency response planning and experienced in working with state and local government personnel.
- 2) It must be emphasized that the state and local governments are to take the lead roll in aggressively attacking planning problems and should rely on the federal consultant for technical assistance but not leadership.

On page II-116, second paragraph the statement".....state and local governments both receive NRC concurrence" needs clarification. Is concurrence to be given to the governments on the plan? How do "both" receive concurrence assuming there is one "state" plan?

Sincerely,


James L. Montgomery, Section Chief
Radiation and Hazardous
Wastes Control Division

JLM:er

State of Washington Department of Emergency Services



STATE OF
WASHINGTON

Dixy Lee Ray
Governor

DEPARTMENT OF EMERGENCY SERVICES

4220 E. Martin Way, Olympia, Washington 98504

206/753-5255

Betty J. McClelland, Director

June 5, 1979

Mr. Robert Ryan, Director
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington D.C. 20555

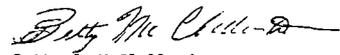
Dear Mr. Ryan:

Thank you for the comment copy of Steve Salomon's draft report on financing fixed nuclear facility offsite emergency plans. My staff found this report interesting and informative. They were very pleased to note that the information we shared with Mr. Salomon was correctly used in the paper.

As for the report's conclusion, we believe that the only possible way to adequately finance offsite emergency plans for fixed nuclear facilities is to require the license holder to guarantee an adequate sum of money to be used by local governments to develop and periodically update such emergency plans. Therefore, we concur with the proposal to require license holders to financially support emergency plans. We also believe that some special planning circumstances (such as the Trojan Plant problem of an Oregon based utility locating on the State's border with Washington) need to be closely examined as the greater question of emergency plan financing is addressed.

All in all, we have no qualms or quarrels with Mr. Salomon's report, and we hope the Commission soon takes his suggestions to heart.

Sincerely,


Betty J. McClelland
Director

BJM:rh

**State of Connecticut
Office of Civil Preparedness**



STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC SAFETY
OFFICE OF CIVIL PREPAREDNESS

May 3, 1979

Mr. Robert G. Ryan, Director
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Ryan:

We have reviewed the report of Dr. Stephen N. Salomon of your office.

Some of Dr. Salomon's recommendations are favorable, and others we feel may be very inappropriate in this state.

Part of the difficulty arises regarding funding, because single towns in Connecticut receive major tax benefits from nuclear facilities, whereas an incident may impact on many towns or communities. In other words, there is a divergence between the risks and the benefits geographically. One case in point would be the suggestion for a \$20,000 minimum yearly salary for local Civil Preparedness Directors in the vicinity of nuclear power plants. The salary should be in line with the heads of other emergency department heads to keep from causing problems in small towns. In our state some towns exert more emergency leadership than others and population size in many cases exerts the pressure for a greater need for emergency leadership.

It would appear that a more equitable funding technique would be to set a top sum available for towns and states to increase their peacetime nuclear preparedness and allow them (the towns and states) to submit an individual grant application for funds to serve their needs for plans, equipment and personnel. Some towns are already better prepared in some areas of emergency preparedness than others. Some of Connecticut's towns would have a greater need for a media center or special communications network rather than a more comprehensive planning effort.

Some items of concern to Connecticut not covered in the report are:

- 1) Refresher training for those trained at Las Vegas in the RERO course.
- 2) The problems of standardization in planning - i.e. incident classes vary from state to state, record keeping of public exposure, on-site monitoring procedures and evacuation signs.

Phone: 566-3180
360 Broad Street — Hartford, Connecticut 06115

An Equal Opportunity Employer

- 2 -

- 3) The need for contiguous state planning with follow-up drills and exercises where needed.
- 4) The requirement for media centers.

In summary we are in agreement that funding will be needed to assist in the planning and preparedness process; but we do have additional concerns, and we do not entirely agree with the method of raising or distributing the funds. An additional 10 NRC consultants will probably not provide an immediate answer to the needs of state and local government.

Very truly yours,

A handwritten signature in cursive script that reads 'Frank Mancuso'.

Frank Mancuso
State Director

FM:aq
cc: A. Hekking
IOAC
C.F.

**State of California
Office of Emergency Services**

STATE OF CALIFORNIA

EDMUND G. BROWN JR., Governor

OFFICE OF EMERGENCY SERVICES

POST OFFICE BOX 9577
SACRAMENTO, CALIFORNIA 95823
(916) 421-4990



June 11, 1979

Stephen N. Salomon
Office of State Programs
U. S. Nuclear Regulatory Commission
Mail Stop 7109
Washington, D. C. 20555

Dear Steve:

Attached are specific comments dealing with "BEYOND DEFENSE-IN-DEPTH", NUREG-0553. I realize my comments are quite late, nevertheless, I did want to share them with you.

In addition to the specific comments, I have some general observations regarding the Executive Summary, pages I.1. and I.2.

- A. I am confused why we would spend \$35 million for achieving NRC concurrence while simultaneously spending \$27 million for implementing the EPZ concept for most sites. Are these mutually exclusive events? I would imagine our total planning effort should be directed to the EPZ concept and not simply to get NRC concurrence.
- B. The \$5 million for 10 Office of State Programs, NRC consultants is only for 5 years and not for the period of 1980-2000. I know this is a matter of semantics, but it should be made clear. In fact, many of the costs included in the \$147 million will be expended in the first few years with only maintenance costs during the remainder of the 20-year period.
- C. With regard to 100% funding of local government officials, are the \$40 million FEMA funds to be distributed over the 20-year period; if not, over what period? If its over the 20 years, this is only an increase of \$2 million per year. This won't get us very much even though you propose a salary of about \$20,000 per year for these individuals, whereas \$100,000 is proposed for the 10 NRC consultants. You reference this 100% funding to all impacted jurisdictions within the 10-mile EPZ without identifying how many jurisdictions would be involved. Also, if FEMA is going to provide 100% for personnel within the 10-mile EPZ, will they provide 100% funding for personnel within a potential earthquake zone, or tornado region, or hurricane area? What I'm trying to say is, I seriously doubt FEMA can provide 100% funding without the floodgates being opened for requests from all over the country for all kinds of hazards.

Stephan N. Salomon - p2

- D. Finally, you indicate this document presents a program at a cost believed to be efficient, effective, and equitable. Frankly, I didn't see anything that describes how this \$147 million is going to be administered over the next 20 years that would make the program efficient and equitable. The disbursement of these funds to the myriad of jurisdictions in the United States is going to be difficult, to say the least.

I don't intend the above or the attached comments to be derogatory in any sense. This is an excellent document representing an awful lot of hard work and you are to be congratulated for your efforts. Your travels throughout the United States undoubtedly brought you into contact with a wide variety of state and local government priorities and competency. It should be clear that unless a mechanism is devised to properly administer and coordinate the program it will fail even though \$147 million is made available. This point didn't receive the attention it deserves in your report.

If you are available in Bethesda during the IOAC meeting June 18-21, perhaps we can discuss this further.

Sincerely,

John J. Kearns
Assistant Director

attachment

CALIFORNIA OFFICE OF EMERGENCY SERVICES
COMMENTS REGARDING
"BEYOND DEFENSE-IN-DEPTH"
NUREG-0553
BY
Stephen N. Salomon
U. S. Nuclear Regulatory Commission

COMMENT

Part I

Pages

I-1 & I-2 Refer to cover letter dated June 11, 1979, John J. Kearns to Dr. Stephan N. Salomon.

Part II

Pages

II-6 The historical costs indicate a great deal of uncertainty about the actual costs of preparing the plans. I know we did not keep accurate time reports of all staff members involved in this effort, as well as compiling all incidental costs associated with the plan development and distribution. I'm certain other states faced the same problems we did in trying to answer your questions regarding funding.

Also, on this page you mention "Note that these costs do not reflect State needs necessarily." Are you saying the plans we prepared are not adequate or that they have been written merely to satisfy the requirements of 75/111? You don't elaborate and I'm not quite sure what you mean.

II-28 The first paragraph of this page details that few local officials kept good records regarding personnel time devoted to plan development. The same situation prevailed at the state level and it should be so noted.

II-44 You indicate, "In general, California counties incur costs for local training whereas in most cases, the states take primary responsibility for training." Your statement makes it sound like we have shunted this responsibility to the county and this just isn't the case. First of all, by law the county has basic responsibility to handle all disasters within their boundaries. This includes preparation for such disasters; plans, training, exercises, etc. Secondly, at the state level we have a comprehensive training program and all counties including San Luis Obispo have participated. Granted the counties present training and conduct exercises without state involvement, but it isn't because we won't or can't assist them. This should be clarified.

Also, the equipment you reference as being purchased by San Luis Obispo County was, I believe, actually paid for by the utility company.

II-46 Wow! the resource needs submitted to TVA of \$595,000 initial costs and about \$183,000 annual costs are to say the least, interesting. What do they actually propose to get with this amount of money?

NUREG-0553 - p2

Pages

II-49 The comment regarding whether government manpower costs should be viewed as real costs in an interesting one. I think they become real the minute additional resources or manpower are required above and beyond their normal day-to-day operations. Obviously, highway restoration is a normal function of the Highway Department, but if they have to hire a planner to develop plans to mitigate unique disasters affecting the highways, then this planner is a real cost. As I said its an interesting thought.

II-49 & 50 This particular course has reached virtually all of the presently involved jurisdictions. However, with the advent of the enlarged planning zones a lot of new jurisdictions will be involved and this course will have to be put "on-the-road" to meet these needs.

II-53 The statement "Some local officials believe that additional costs will be incurred if local plans are reviewed in order to achieve NRC concurrence. . ." really scares me. Does this mean their local plans have been developed without taking concurrence into consideration? Have they ignored 75/111 or what?

Also, I'm not sure why the local plans would cost less than the state plans. In a way they are much more detailed from an operational standpoint and would cost as much if not more.

II-56 Again, California vests primary responsibility in local government and that's why we had a large number of local attendees at the NRC/EPA sponsored courses. I should point out that a good many of the locals had a hard time with the mechanics of the course. With this in mind I like the idea of some state representatives attending the course then developing a course to present to county and other local officials.

II-62 I think you are downplaying ARAC on the basis of incomplete meteorological information when in reality this is not the case. The criticism comes from trying to extend information from one location in a state to another location in that state. Specifically, the ARAC information from the DOE facility at Rocky Flats, Colorado was extrapolated for use in the Fort St. Vrain incident and there were minor complications. When meteorological stations are at sites where ARAC is to be used this shouldn't be a problem. In fact, we think ARAC will be one of the best tools available for planning, training, or emergency use.

Also, I somewhat agree with the comment that the "ring system" is too expensive to maintain, but this is based on a DCPA study in Rockville, Maryland many years ago. The present state of the art may be such that this is not now the case.

II-64 The use of NOAA storm alert radios as an alerting mechanism is something we haven't seriously considered, but will certainly investigate further. These could be purchased for those living in remote or inaccessible areas.

Pages

- II-65 I haven't seen anything that says the CD V-138 dosimeter (0-200 mR) is not rugged enough for field use. We use them in our training program and they are effective. Also, I would caution regarding a general statement on the CD V-740 dosimeter (0-20 R) as some of these are prone to leakage and would give false readings.
- II-68 The statement at the bottom of the page is important in that few states have really addressed the problems of fixed facilities other than nuclear power plants. With the Livermore Lab and the Berkeley Labs in California, we face a difficult job and will need lots of help including funding.
- II-69 I don't agree that there are "many points of commonality" between fixed facility planning and transportation accidents. There may be some, but I doubt there are many.
- II-78 The scaling down of the generic EPZ's is important for facilities such as Humboldt Bay. If the 10 and 50 mile planning zones are based on 1000 MW then there must be a tremendous reduction in planning size for a 63 MW reactor.

Chapter 6 - Funding State Governments and Chapter 7 - Funding Local Governments are an excellent summary of the various ways the emergency preparedness programs are funded. It only serves to point out there is no simple panacea for this problem. As I pointed out in my cover letter, even if \$147 million is made available for the period 1980-2000 without a coordinated method for allocation and accounting the program will fail. This problem needs to be addressed in greater detail.

**Oswego County
Office of Emergency Preparedness
Civil Defense**

George W. Brower
~~MICHAEL SPERANO~~
Director

**OSWEGO COUNTY
OFFICE OF
EMERGENCY PREPAREDNESS
CIVIL DEFENSE**

200 North 2nd Street, Fulton, N. Y. 13069

TELEPHONE
593-2175
598-0871

5 June 1979

Mr. Robert G. Ryan, Director
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Ryan:

Comments on NUREG-0553, Draft, March 30, 1979, "Beyond Defense-in-Depth" are forwarded for your information.

The need of sound Radiological Emergency Response Planning is becoming more and more apparent as the nuclear industry grows. The funding for such programs on the local level is almost non-existent in comparison with the planning parameter growth "suggested" by the Nuclear Regulatory Commission and the growing demand by the public for more effective and proven response planning.

A report like NUREG-0553 has been long overdue. The report identifies with the needs of local responsible agencies. The funding mechanism suggested by Dr. Salomon seem, to me, to be realistic and equitable.

I am in particular agreement with Dr. Salomon's statement on Page II - 116 where he states - - "no nuclear power station should be permitted to operate unless the impacted State and local governments both have received concurrence." I believe, that if this idea was enforced as law the technology and funds for radiological emergency response planning would be readily established. After-all, if one cannot create and implement a viable response plan in the time it takes to build and license a nuclear power plant, then it most likely will never be done. I also believe that a generation of constructive cooperation of all parties concerned; federal, state, and local governments as well as the licensee will emerge from such action.

In perspective of Three Mile Island, our job is no longer being looked at as "Icing on the Cake". The NRC must come to grips with inadequate planning. I feel that a funding mechanism is an integral part of the solution. Dr. Salomon's findings are valid and I commend him on this paper.

Sincerely,


George W. Brower
Director

GWB;mw

**Linn County/Municipal
Civil Defense**

FROM: WILLIAM M. BJORENSEN, DIRECTOR
LINN COUNTY/MUNICIPAL CIVIL DEFENSE
CITY HALL CIVIL DEFENSE CENTER
CEDAR RAPIDS, IOWA 52401



PHONE :
383-2671 Day or Night

DATE- June 6, 1979

Mr. Robert G. Ryan, Director
Office of State Programs
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

RESPONSE on SALOMON REPORT

One issue recognizes extra costs for special efforts and obligations to those who have nuclear plants nearby.

Another discusses how to raise the money.

The third considers methods for justifiably allocating.

Extra costs should include those listed and there needs to be more consideration for the expenses built up when anti-nuke demonstrators necessitate personnel overtime and other expenditures. This, of course, is most important to law enforcement types.

Methods of raising the money sound rational as suggested and should come from the utility. Attached is a copy of a letter to me from Linn County Sheriff Orlie Workman. He expresses regrets that responding to demonstrations has helped to chip away at his strained budget so much that his deputies weren't allowed to participate on overtime in our radio-logical monitoring training this spring.

For the last twenty years we have been oriented in our local CD operations toward providing all risk preparedness. Our efforts were convincing enough that budgeting had not been a problem until recent years when budget increases have been limited by state law. Inflation has increased much faster than budgets can be raised. For the last five years this has been compounded by extra time involved and costs incurred by the start up of Duane Arnold Energy Center.

We already had a special designed CD Center and a progressive build up of communications before the nuclear plant was built. It would be difficult to determine which costs were above the level which would otherwise have been needed for facility and equipment. Time and temper have certainly been much more strained since the birth of our on line nuclear electric plant.

Property tax base for this generating facility is spread out over approximately half of the counties in Iowa in relation to the amount of electric power they consume from this utility. We in the home county having extra

Page 2

costs do not realize extra tax income toward our budgets.

We were interested in the late arrival of thyroid blocking agents into the TMI incidents. The respective stockpiles of long keeping types of blocking agents could be purchased by the funding suggested in Steves study. They could be kept locally under the responsibility of local CD the same as CD shelter supplies.

In one report to former IOAC Chairman Dave Snellings I suggested that a much greater understanding in elements of preparedness around nuclear facilities could come from federal underwriting of costs for a state representative for NRC where nuclear facilities are situated. There could be better preparation in standardization of monitoring of water, air and background. Interpretation and compliance with checklists of preparedness can benefit from field representatives who are well chosen and trained plus adequately paid to avoid unreasonable attrition. These persons could be on the staff of state D.E.Q. or Health or CD with a share match on P & A costs.

The survey and study done by Dr. Stephen Salomon is in a necessary field of raising money and allocating it to those who have incurred related expenses. This should be in accord with the presence and operation of a nuclear electric generating plant. We will be happy to be cooperative and helpful. Steve did a good job!

William M. Bjorenson, Director

enclosure

P. O. BOX 5034
CEDAR RAPIDS, IOWA 52407

TELEPHONE
OFFICE 398-3521
AREA 3191

Office of
Orlie J. Workman, Sheriff

FIRST DEPUTY
DAROLD SMITH

May 23, 1979

Mr. Bill Bjornsen, Director
Linn County Civil Defense
City Hall
Cedar Rapids, Iowa

Dear Bill:

This letter is in reference to your inquiring as to our deputies attending a Radiological School in regard to the Palo nuclear plant. Please be advised that I would very much like to send my deputies for this training as we have in the past, but due to budget limitations, financially this department can no longer afford such training.

To give you an idea of what we are talking about, as you are well aware we have had three demonstrations at the nuclear plant in the last six months. Taking into consideration the cost of fuel, overtime, meals, food, and vehicles required to cope with these demonstrations, the cost to our department for three demonstrations comes to a total of \$7,800.00.

Extra training in regard to this radiological training cost us last year for overtime \$6,000.00. Extra equipment in regard to that training, such as gas masks and gas, came to \$1,000.00. Having the drills which are required by us cost us approximately \$1,500.00 which is a conservative figure.

Taking this all in consideration, I think that you can see our problem at this point in regard to financially being able to cope with occurrences which cannot be budgeted for. Hopefully, any relief from this problem may come from outside agencies indirectly or directly involved with nuclear energy.

Sincerely yours,



ORLIE J. WORKMAN, SHERIFF
LINN COUNTY, IOWA

OJW/kr

CC: Captain Darold Smith
Board of Supervisors

Kitsap County Department of Emergency Services

KITSAP COUNTY DEPARTMENT OF EMERGENCY SERVICES
614 DIVISION STREET
PORT ORCHARD, WASHINGTON 98366

1 June 1979

Mr. Robert G. Ryan, Chairman
Federal Inter Agency Central Coordinating Committee
Radiological Emergency Response Preparedness
United States Nuclear Regulatory Commission
Washington D. C. 20555

Dear Mr. Ryan:

The following comments concerning NUREG-0553 Beyond Defense in Depth (cost study) by Dr. Stephen N. Solomon dated March 30, 1979 are hereby submitted:

For background information Kitsap County Washington is an important Center of and is supported by employment at several Department of Defense establishments to include Puget Sound Naval Shipyard, Naval Underseas Weapons Facility, Naval Fuel Depot and The Trident Submarine Base Bangor. These Federal establishments account for the vast majority of payroll dollars in Kitsap County but do not contribute to local revenue in the form of taxes. Small payments for schools in lieu of taxes in no way compensate for loss of revenue.

The Kitsap County Department of Emergency Services representing the County and also four incorporated cities is the lead Agency in Planning for and Coordinating activities to mitigate the effects of all disasters whether natural or war caused. The department at present consists of a Director, an Assistant Director and a Secretary. Our budget for Calendar Year 1979 totals \$65,200 with \$34,606 being contributed by the County and the four cities and an estimated Federal Contribution for Personnel and Administrative expenses and Special Projects of \$30,594. A further breakdown indicates that \$2160 is budgeted to cover Administrative expenses which includes Office supplies, Printing, Postage and Telephone.

Obviously any additional extra ordinary planning effort such as an adequate response plan for the contingency of a release from a Naval Nuclear Reactor will require a significant increase in our department budget or some special additional funding source.

Because of the limited tax base for Kitsap County a reduction in force of 16% of County Employees has been announced with tentative date of implementation 1 October 1979. If our department is not affected by this reduction I believe we will have sufficient expertise to produce such a response plan provided additional funding to cover such costs as assembling data, map production, reproduction and printing, training, and testing becomes available. If our department is affected by a reduction in force it would be necessary for some Agency

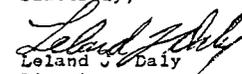
- 2 -

of Government to employ a professional planner under contract to produce such a plan. The undersigned would more than likely be lost to the department in case of a reduction in force as he alone is eligible for a retirement.

I am not able at present to project a firm figure to cover extra costs necessary to produce an adequate response plan but based upon our experience in producing our Community Shelter Plan an estimate would be in the neighborhood of \$20,000.

In my comments I have attempted to point out the fact that our situation is unique. I was much impressed by the detail involved in Dr. Solcmans study and report.

Sincerely,


Leland J. Daly
Director

LJD:mpd

United States Nuclear Regulatory Commission

Office of Policy Evaluation



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

May 9, 1979

MEMORANDUM FOR: Robert Ryan, SP
FROM: Al Kersting, Acting Director, OPE
SUBJECT: DRAFT REPORT -- BEYOND DEFENSE IN DEPTH

As you suggest in your accompanying memo, the issues of emergency planning and preparedness are central to NRC's concerns at present. Hence a report related to these subjects will probably receive far wider visibility and circulation than would otherwise be the case. For that reason, I have requested several OPE staff members to review the report and to offer suggestions that they believe to be appropriate.

We have several general comments that we would like to offer for your consideration:

- The report lacks a clear statement as to the rationale supporting a cost and funding study of state and local planning efforts. Since the Commission has not yet set goals or considered additional policies it wishes to pursue in this area -- which might require additional programs, changed requirements and new procedures by all levels of government -- we believe that the draft report is premature in dealing with monetary concerns. Once the Commission has provided guidance with respect to emergency planning policy and has determined whether it wishes to recommend changes related to the allocation of responsibilities among Federal, state and local governments and the private sector, it would be appropriate to consider cost issues and alternative funding approaches.
- The methodology that is described on pages II-1 and II-2 appears to be thin and does not seem adequate for eliciting the type of information that is sought. To solicit information from the states about their present and future needs, based on an historical context and their own best estimates of emergency preparedness efforts, is not the soundest way of assessing costs. What is needed are sound data covering the types of programs to be pursued and the standards of performance to be achieved. Moreover since the details of data and analysis are not always clear, there seems to be insufficient information supporting the cost estimates that are provided.

CONTACT:
Joan Aron (OPE)
634-3302

Robert Ryan

- 2 -

- The conclusions that are presented seem to be very sweeping in nature and we do not find a clear relationship between the recommended improvements in emergency plans and preparedness and the data that are provided.

Given the fluid nature of the policy issues on which the report is based and the Commission's ongoing review of NRC's role in dealing with emergency planning, I believe it would be prudent to delay publication until such time as the Commission has developed a basic philosophy for this issue area and better data are available, including the results of the various reviews of the implications of the Three Mile Island accident.

For your further information, we are also making some specific comments of lesser significance that we believe would improve the report:

- The recommended program of improvements which is provided in the Executive Summary and in the text should be preceded by a discussion of the reasons for conducting such a study, a description of Federal, state, local and private sector responsibilities in this area, and NRC's present policy, programs and requirements; including the concurrence procedures for approving state and local plans. Such a statement would help to lay the groundwork for suggesting improvements in monetary terms.
- The methodology should make clear whether the states which were selected for the sample have nuclear reactors located therein -- or nearby. Also, do the states selected reflect a representative sample of the states in view of the criteria that were used? Additionally, it is unclear what hypothesis was tested in the questionnaire that was circulated.
- Most of the "tables" are not set up in tabular form. The information would be easier to examine on a comparative basis if actual tables were used to document the information.
- The local estimates, as you point out, are judgmental and based on guess work. Since they do not furnish a sound basis for estimating costs, specific performance standards would be useful for examining current efforts.

We would be happy to discuss our comments with you in more detail.

cc: Leonard Bickwit

**Office of the Executive
Legal Director**



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

May 15, 1979

MEMORANDUM FOR: Robert G. Ryan, Director
Office of State Programs

FROM: Royal J. Voegeli
Office of the Executive Legal Director

SUBJECT: DRAFT REPORT - BEYOND DEFENSE-IN-DEPTH: COST AND FUNDING
OF STATE AND LOCAL GOVERNMENT RADIOLOGICAL EMERGENCY
RESPONSE PLANS AND PREPAREDNESS IN SUPPORT OF COMMERCIAL
NUCLEAR POWER STATIONS, NUREG-0553, MARCH 30, 1979

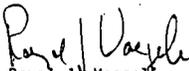
This is in response to your request for comments on the subject draft report. Our comments are directed toward the recommendations set forth in the "Preferred Approach" on Pages II - 115 and 116.

1. NRC has no authority to impose a fee on applicants or licensees as a means of raising funds to cover State and local government costs for emergency plans and preparedness (31 U.S.C. § 483a, and cases decided thereunder). In any case, even if some rationale could be developed to support the imposition of additional fees, under existing law NRC could not use the fees to cover State and local government costs, since all fees collected must be paid into the U. S. Treasury as miscellaneous receipts. Legislation would therefore be needed to permit the imposition and use of the recommended fees.
2. The Preferred Approach also makes reference to using the "contracting mechanism" as a way of distributing funds to the State and local agencies. In considering the specific method(s) you may want to use in distributing any funds which NRC would be authorized to distribute to State and local agencies, you should be aware of the Federal Grant and Cooperative Agreement Act of 1977 (41 U.S.C. §§ 501-509). Basically, the Act defines the types of contracts and agreements to be used in transactions between Federal and non-Federal entities. There is nothing complex about the requirements of the Act, but they would have to be followed in distributing any such authorized funds to the State and local agencies. We will be happy to work with you in assuring compliance with the Act.
3. There should be no problem with the recommendations regarding NRC's training programs and the use of NRC staff in assisting State and local governments with their emergency planning efforts. NRC is already conducting training programs and providing staff assistance to State and local governments; the Preferred Approach merely recommends that those activities be expanded. The expanded

- 2 -

activities would of course have to be properly authorized and funded. Similarly, the recommended use of research funds would have to be properly authorized and funded.

4. We assume that FEMA will address the recommendation on the use of FEMA funds in their comments, and hence we have no comment at this time on that recommendation,


Royal J. Voegeli
Office of the Executive
Legal Director

**Office of Nuclear
Reactor Regulation**



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MAY 9 1979

MEMORANDUM FOR: Robert G. Ryan, Director
Office of State Programs

THRU: Harold R. Denton, Director *RD*
Office of Nuclear Reactor Regulation

FROM: Richard C. DeYoung, Director
Division of Site Safety and Environmental Analysis
Office of Nuclear Reactor Regulation

SUBJECT: DRAFT NUREG-0553, "BEYOND DEFENSE IN DEPTH"

This Office has not had ample opportunity to study this document to determine if the recommendations therein are adequately supported by the facts obtained through the investigations and survey efforts described. We recognize that it is quite likely that additional Federal support for State and local preparedness efforts is warranted. We question however, whether a grant program, funded in the manner suggested, is necessarily the best way to accomplish this.

We are somewhat surprised to find in the executive summary the statement that the recommended program would achieve "the greatest reduction in potential risk to the public from commercial nuclear power stations...." We are unable to find a basis for such a conclusion. Further, there does not appear to be any attempt at developing a rationale for reallocating light water reactor safety research funds to the proposed grant program on a relative risk reduction basis.

Of greatest importance however, is that we believe it is premature to view State and local government funding needs out of context of a Federal response role. The Three Mile Island experience has shown the existence of a very substantial Federal response capability (IRAP) as well as a need to consider how this capability might be better coordinated in future events.

We suggest that the report's investigations and surveys reflect potentially useful information but that it be published without specific recommendations.

Richard C. DeYoung
Richard C. DeYoung, Director
Division of Site Safety and
Environmental Analysis
Office of Nuclear Reactor Regulation

R. G. Ryan

-2-

MAY 9 1979

Distribution: H. Denton
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**Office of Inspection
and Enforcement**



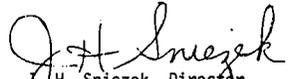
UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUN 06 1979

MEMORANDUM FOR: Robert G. Ryan, Director, Office of State Programs ✓
FROM: J. H. Sniezek, Director, Division of Fuel Facility
and Materials Safety Inspection, IE
SUBJECT: DRAFT REPORT - BEYOND DEFENSE-IN-DEPTH

We have reviewed the subject draft report and find that it contains a great deal of interesting information on costs and funding of State and local governments efforts in radiological emergency planning and preparedness. However, the Executive Summary is not a summary of the report; rather it is a proposal for expanding and funding State and local government efforts in this area. Furthermore, the recommendations are made without a discussion of the justifications, alternatives or cost-benefit.

We endorse the publication of Part II, with the exception of the last section, "Preferred Approach." This last section does not identify whose preferred approach, nor does it adequately describe how or on what basis the recommendation is made. A marked up copy of the report is enclosed.


J. H. Sniezek, Director
Division of Fuel Facility and
Materials Safety Inspection
Office of Inspection and Enforcement

Enclosure:
As stated

CONTACT: L. J. Cunningham
49-28188

**Office of Standards
Development**



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MAY 25 1979

MEMORANDUM FOR: Robert G. Ryan, Director, Office of State Programs
FROM: Robert B. Minogue, Director, Office of Standards
Development
SUBJECT: OFFICE OF STANDARDS DEVELOPMENT COMMENTS CONCERNING THE
DRAFT REPORT - BEYOND DEFENSE-IN-DEPTH: COST AND FUNDING
OF STATE AND LOCAL GOVERNMENT RADIOLOGICAL EMERGENCY
RESPONSE PLANS AND PREPAREDNESS IN SUPPORT OF COMMERCIAL
NUCLEAR POWER STATIONS, NUREG-0553, MARCH 30, 1979

In response to your memorandum of April 10, 1979, SD staff has reviewed the subject report and the following comments are forwarded for your consideration.

1. The basic concept of funding State and local emergency preparedness efforts as described and recommended is analogous to recommendations outlined in the Draft report to the President by the Toxic Substances Strategy Committee. The concept has merit and is worthy of support.
2. We do not find adequate justification for your suggested method of obtaining the funds to support State and local emergency preparedness efforts by increasing the licensing fee by \$1 million and by diverting \$15 million from NRC's LWR safety research program.
3. We do concur that Federal/NRC emergency preparedness training programs should be continued.
4. We do not consider it appropriate that NRC should be telling the newly established Federal Emergency Management Agency how local personnel and directors should be selected and at what minimum salary levels they should be paid.
5. We question the appropriateness of the title "Beyond Defense-in-Depth". We consider that the Emergency Planning that is required by our regulations, both for the licensee and the arrangements made with the state and local governments, already provide protection of the health and safety of the public, and are part of NRC's defense-in-depth approach to regulation. The concepts outlined in your paper which deal with further reducing potential risk to the public by improving offsite emergency plans through direct Federal Funding will provide an additional level

R. Ryan

- 2 -

MAY 25 1979

of defense-in-depth. In fact we believe your overall concept of "defense-in-depth" as outlined in your Executive Summary is too limited.

6. We consider that your conclusion that "'Beyond Defense-in-Depth' presents a program for achieving the greatest reduction in potential risk to the public from commercial nuclear power stations at a cost believed to be efficient, effective and equitable." is an overstatement of its real value.

If we can be of further assistance to you in this matter please contact Michael Jamgochian.

Robert B. Minogue

Robert B. Minogue, Director
Office of Standards Development

Office of Nuclear Material Safety and Safeguards



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MAY 17 1979

MEMORANDUM FOR: Robert G. Ryan, Director
Office of State Programs

FROM: William J. Dircks, Director
Office of Nuclear Material Safety and Safeguards

SUBJECT: DRAFT REPORT - BEYOND DEFENSE-IN-DEPTH, NUREG-553,
MARCH 30, 1979

The Office of Nuclear Material Safety and Safeguards has reviewed the subject draft report. Emergency preparedness planning for commercial nuclear power reactors is a subject being given considerably more attention since the Three Mile Island accident in terms of both adequacy of preparedness and sources of funding to support this activity. The draft NUREG-553 can act as a first step towards providing information on this important subject.

There are, however, several issues that should be addressed before final publication:

1. Have the assumptions and requirements based on the survey data obtained prior to March 28, 1979, changed as a result of the lessons learned from the TMI accident?
2. As stated on page II-113, the draft has not fully evaluated whether the funds obtained from the recommended increased NRC license fee approach can be legally distributed by NRC to state and local governments. Is the recommended alternative viable if new legislation is required?
3. The document uses "present worth" calculations to discount the future cost stream back to the present time. Using a 10 percent discount rate and ignoring the 7-10 percent inflation rate may underestimate the amount of funds required by the NRC licensing fee approach.

If you or Dr. Salomon have any questions concerning these comments, Mr. John Surmeier may be contacted on extension 74181.

William J. Dircks

William J. Dircks, Director
Office of Nuclear Material
Safety and Safeguards



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MAY 25 1979

MEMORANDUM FOR: Robert G. Ryan, Director
Office of State Programs

FROM: Learned W. Barry
Controller

SUBJECT: COMMENTS RE "BEYOND DEFENSE-IN-DEPTH" COST AND
FUNDING REPORT

The proposal contained in the subject draft report is predicated on the existence of a funding mechanism that is not in place. Basically, the report proposes that state EP programs be funded through money transferred to the state from NRC funds. This NRC money, in turn, would be derived from:

- (1) Increasing NRC license fees by \$1M.
- (2) A one-time charge, for operating plants, of \$1M per site.
- (3) Diverting \$15M from the Light Water Reactor Safety Research budget for state emergency response activities.

Additionally, the report proposes that management personnel for the state emergency preparedness programs should be paid by FEMA. Any further funding required by the state would be derived through state taxes on the utilities.

With regard to items (1) and (2) above, the NRC presently has no direct control over revenue received from utilities for fees or other assessments. These funds are deposited directly in the U. S. Treasury and the assumption that they are available to NRC for distribution to the states is incorrect. Any NRC money destined for distribution to the states would have to be appropriated by Congress in the same manner as any other NRC "salaries and expenses" item contained in the annual budget. In view of the magnitude of the funds required by the states, as presented in this report, Congressional and Executive Branch approval to correspondingly increase the size of our budget appears speculative at best.

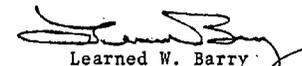
With regard to the proposal to divert \$15M from the Light Water Reactor Safety Research budget, this would not only require Congressional reprogramming approval but likely would also meet with resistance within the Office of Reactor Safety Research. We would

Robert G. Ryan

- 2 -

MAY 25 1979

be interested in receiving the RES comments in this regard. Overall, it appears that what is being proposed is a state run but Federally-funded emergency response program. If FEMA is to be involved in providing personnel and administrative funds, perhaps consideration should be given to assigning full funding responsibility to that agency. In any event, appropriate NRC funding would need to be budgeted for and appropriated by Congress.


Learned W. Barry
Controller

**Office of International
Programs**



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

April 27, 1979

MEMORANDUM FOR: Robert G. Ryan, Director
Office of State Programs

FROM: Joseph D. Lafleur, Jr., Deputy Director
Office of International Programs

SUBJECT: DRAFT REPORT, NUREG-0553

We have no comments to offer on the subject report.

Joseph D. Lafleur, Jr.
Deputy Director
Office of International Programs

**Office of Management and
Policy Analysis**



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555
May 9, 1979

MEMORANDUM FOR: Stephen N. Salomon, OSP

FROM: Maggalean W. Weston, APB

SUBJECT: COMMENTS ON DRAFT REPORT - BEYOND DEFENSE-IN-DEPTH:
COST AND FUNDING OF STATE AND LOCAL GOVERNMENT
RADIOLOGICAL EMERGENCY RESPONSE PLANS AND PREPARED-
NESS IN SUPPORT OF COMMERCIAL NUCLEAR POWER STATIONS,
NUREG-0553, MARCH 30, 1979

Per your request, we have reviewed the attached report, subject as above, and have the following comments:

1. The NRC does not have statutory authority to deny permission to operate nuclear power facilities on the basis of NRC nonconcurrence in the State and local governments' emergency plans. We believe this point should be highlighted for explicit Commission consideration.
2. Is it possible to consider the Three Mile Island experience in the resource estimates?
3. The cost projections contained in the report appear to be on the high side.
4. State and local officials seem to feel that a disproportionate amount of money is being spent inside the fence as opposed to outside. What other basis is there for the assumption that funds from the LWR safety research should be diverted to State and local government radiological emergency response planning?

We hope these comments are of use in your final report. If you have any further questions, please contact me on Ext. 27721.

Maggalean W. Weston
Senior Program Analyst
Analysis and Planning Branch, MPA

Attachment:
As stated

cc: R. G. Ryan
N. M. Haller
H. S. Bassett
S. K. Conner

State of Alabama
Civil Defense Department



STATE OF ALABAMA
CIVIL DEFENSE DEPARTMENT
ADMINISTRATIVE BUILDING
MONTGOMERY 36130

FOB JAMES
GOVERNOR

May 9, 1979

JOE B. HEDRICK
ACTING DIRECTOR

Mr. Stephen N. Salmon
State Programs Officer
Office of State Programs
Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Draft Report - Beyond Defense-
In-Depth: Cost and Funding of
State and Local Government
Radiological Emergency Response
Plans and Preparedness in Support
of Commerical Nuclear Power
Stations, NUREG-0553, Mar.30,1979

Dear Mr. Salomon:

The draft report has been reviewed, as requested, and we essentially concur in the contents of this document. The following comments are made for your consideration.

- a. The costs for developing and exercising the plans in Alabama are probably as accurate as any set of figures we might develop. The implication, however, is that the development and exercises of the plans has been primarily the result of effort at the local level when, in fact, the major work load and guidance has been at the state level. This is not intended as a diminution of the local effort, but merely to note the primary role of the state office.
- b. Page II-62. Reference is made to Alabama's preference for the "ring system" for dose assessment. However, "the current view of some NRC staff...is that the system is too expensive in view of the benefits." In this post-Three Mile Island era, it would seem appropriate to rethink this philosophy. An NRC R&D program which would install the ring system around the Brown's Ferry Plant in northern Alabama might well prove to be a most worthwhile expenditure. It certainly warrants serious consideration.

"CIVIL DEFENSE IS PLANNING TO SAVE YOUR LIFE."

Mr. Stephen N. Salmon

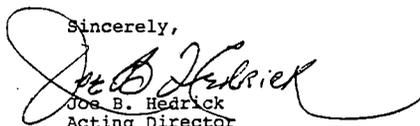
-2-

May 9, 1979

- c. Page II-116. The suggested salary for local directors (at least \$20,000) would place them at such a salary and expected expertise level in Alabama that their selection should not be under the control of local government. They should be subject to higher standards under the state merit system and also be in a more permanent position, not subject to changing administrations at either the local or the state level.

All in all, a very good report and we commend you for your effort.

Sincerely,


Joe B. Hedrick
Acting Director

JBH:DLO/th
cc: File

State of Tennessee
Office of Civil Defense and
Emergency Preparedness



LAMAR ALEXANDER
~~XXXXXXXXXX~~
GOVERNOR

STATE OF TENNESSEE
OFFICE OF CIVIL DEFENSE AND EMERGENCY PREPAREDNESS

JERRY A. McFARLAND
DIRECTOR

EMERGENCY OPERATIONS CENTER
SIDCO DRIVE
NASHVILLE 37204
Phone (615) 741-5181

CARL D. WALLACE
MAJOR GENERAL
THE ADJUTANT GENERAL

May 3, 1979

Stephen N. Salomon, Ph. D.
State Programs Officer
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Dr. Salomon:

In regard to your draft NUREG-0553 dated March 30, 1979, the following comments are presented per your request.

I completely concur in the funding mechanism that you have recommended. Some means of funding will have to be developed other than State and Local funds to carry out this responsibility. I realize that State Government has a responsibility for Emergency Preparedness which is considered by some to be all encompassing. We must realize that this is an added responsibility which falls completely in the realm of Emergency Preparedness. At the same time we must realize that additional costs will be incurred if we utilize the present staff.

The State Office of Civil Defense has become more involved since your visit and looking to the future I can see more involvement, as we exercise our responsibility to the people of Tennessee.

Paragraph four of page I-2 is the ultimate answer to the planning problem on the local level. You should take in consideration that this local director that you refer to could have the responsibility for not only one county but up to a maximum of three counties. The Civil Defense Act of 1950, as amended in Tennessee, provides for this type of arrangement.

Page 2
May 3, 1979

Your reference to communications systems on page II-59, 60 and 61 is one of the most critical elements in the proper emergency response by all concerned. I feel that tremendous emphasis should be placed on this subject. We have just recently been informed that due to a new FCC ruling we will be required to spend an additional \$120,000 on our present system.

You refer to funding by DCPA, FDAA and under DCPA, NCP-Planning, I bring to your attention number one, that DCPA funding for the new FY provides less for State and Local governments than the present FY provides. I also bring to your attention the fact that no policy on the national level exists for natural disaster planning and man-made disaster planning other than on the basis of a nuclear attack on this Nation. I strongly recommend that DCPA funding be increased, not only to include the planning for nuclear facilities, but should include Emergency Planning totally. Our contract with DCPA (NCP) and FDAA (Disaster Planning) does not provide for the involvement of the staff in planning for nuclear facilities. If the contracts were rewritten to allow for their participation, this would not only save money but would allow us to use a professional staff that we have aboard at this time.

The cost that you have indicated in your report as it relates to Tennessee, as well a local government, I believe is under estimated based on the information that you received during your visit. I will not address this subject, I trust our staff in Nashville will address this. I might add though, that your projected costs do seem realistic as of this date. If the guide lines change the cost would increase.

It is my understanding that NRC does not require the utility to have NRC concurrence on State and Local Emergency Response plans prior to licensing of the nuclear power facility. If this is true, I strongly feel that NRC's policy should be changed to require NRC concurrence on all plans prior to licensing.

Sincerely,

John H. Keese, Jr.
Region II-Coordinator
Civil Defense
37 North Porter Street
Winchester, Tennessee 37398

JHKJr/bkw

**Commonwealth of Kentucky
Department for Human Resources**



DEPARTMENT FOR HUMAN RESOURCES
COMMONWEALTH OF KENTUCKY
FRANKFORT 40601

BUREAU FOR HEALTH SERVICES

May 9, 1979

Mr. Harold E. Collins
Assistant Director for Emergency Preparedness
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Collins:

The Kentucky Radiation Control Branch has performed a preliminary review of the NRC staff paper entitled "Beyond Defense in Depth" (Solomon Report). In General, we are in full agreement with the principles developed in this document. In particular, we list the following items:

- 1) We fully agree that planning for nuclear power plants should involve reliable offsite emergency systems in addition to protection provided by defense-in-depth within the facility.
- 2) We agree with the basic idea of an Emergency Planning Zone involving the ability to quickly and safely implement protective action in an area near the nuclear facility. However, based upon the experience at Three Mile Island, we question whether the ten (10) mile radius would be adequate for the EPZ.
- 3) We agree with the concept of assessing sufficient funds from the utility proposing a nuclear power plant to provide planning, equipment and salaries to develop and maintain the safety systems of the EPZ and the environmental monitoring region beyond the EPZ. We believe that contract money should be provided directly to county and state programs. This money should be collected from the utility by the federal government in proportion to the actual need of the affected locality. No state or county matching funds should be required for these contracts.

We appreciated the opportunity to review this document and find it a very refreshing assessment of the need and responsibilities for emergency planning for commercial nuclear reactors. We hope that this report along with the findings at Three Mile Island will lead to appropriate legislation and regulations to be adopted to allow full implementation of nuclear reactor planning activities as outlined in the Solomon Report.

Sincerely,


Gary Young
Radiation Physicist

**State of Wisconsin
Department of Local Affairs
and Development**



State of Wisconsin \ DEPARTMENT OF LOCAL AFFAIRS & DEVELOPMENT

DIVISION OF EMERGENCY GOVERNMENT
EAST CENTRAL AREA OFFICE
P. O. BOX 984
FOND DU LAC, WISCONSIN 54632
(414) 921-5385

May 7, 1979

Mr. Stephen N. Salomon
State Programs Officer
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Salomon:

I have reviewed your "Beyond Defense-in-Depth" report resulting from your trip to several states and will comment briefly on those you reported on in the Eastern part of Wisconsin, namely the Kewaunee County Plant and Point Beach 1 & 2 in Manitowoc County, Wisconsin.

On page II-88 I assume that you knew that at Kewaunee the "director plus two staff" are paid part-time. The "all volunteers" are support in their annual exercise numbering a total of about 60, mostly volunteer, to conduct their annual exercise. The no funding statement is correct in that the director and staff are paid, but the exercise for evacuation as the result of a simulated nuclear plant accident is part of their total planning, i.e. floods, tornado, etc., therefore they do not consider it as separate or additional expense. Kewaunee County is now engaged in expanding the area of evacuation.

In reference to Point Beach 1 & 2 plants, a director has been hired and is making plans to deal with a possible incident or accident. In addition, our two Division of Emergency Government NCR Planners (Civil Defense - Wisconsin) have had a request submitted by our administrator to amend their federal contract to assist in the planning effort; evacuation, congregate care centers, etc.

I just wanted to up-date those two items. The rest seems to be in line.

Sincerely,


Robert J. Kneeland
East Central Area Director

RJK:mh

**State of Delaware
Office of Management, Budget,
and Planning**



STATE OF DELAWARE
EXECUTIVE DEPARTMENT
OFFICE OF MANAGEMENT, BUDGET, AND PLANNING
DOVER, DELAWARE 19901

CEIP

April 25, 1979

Stephen N. Salomon
State Programs Officer
Office of State Programs
Nuclear Regulatory Commission
Washington, DC 20555

Dear Dr. Salomon:

Thank you for the copy of your draft report on cost and funding of state and local radiological emergency response plans and preparedness in connection with nuclear power stations.

The report appears to be comprehensive and detailed.

My only comments have to do with the section on possible use of Coastal Energy Impact Program funds on pages II-109 and II-110. For FY 1979 Delaware has \$555,000 in formula grant 308(b) money (not \$633,000). The \$633,000 figure includes \$63,087 of 308(c)(1) planning grant money and \$15,576 of environmental-recreational 308(d)(4) grant money as well as formula grant money. The Port of Wilmington (City Department of Commerce) is requesting \$401,000 (not \$555,000) for equipment to improve air quality and for preparation of an environmental impact statement for a new dredge spoil disposal site. All funds requested would be formula grant funds provided the total amount requested by all local government and State agency applicants does not exceed the \$555,000 allocated to Delaware. CEIP 308(c)(1) money may have to be used for part of Wilmington's need if total requested formula grant funds exceed the amount available.

Depending upon total CEIP funds requested by all applicants in each CEIP sub-section 308(b), 308(c), etc. there may be sufficient FY 1979 CEIP money available to support a New Castle County radiological emergency response plan. The OMBP should know this by mid-May. However, there is one other possible barrier to CEIP funding of such a plan. As you well know, the Salem nuclear power station is not in Delaware. In the

Mr. Stephen N. Salomon
Page 2
April 25, 1979

past the Office of Coastal Zone Management (U.S. Department of Commerce) has refused to consider this power plant a Delaware energy facility in terms of providing CEIP grants to Delaware to plan for probable or possible effects on Delaware from the Salem nuclear station. The 1976 amendments to the Coastal Zone Management Act which established the CEIP and the regulations adopted by the OCZM apparently make no provision for interstate effects of energy facilities. It may take political persuasion to change this unfortunate situation.

On page II-53 you mention color air photos taken at 23,000 feet elevation by the NRC representing 6 and 11 mile distances from nuclear power plants being available at no cost to State governments. You say that these have a high resolution and are taken on a periodic basis. Can you tell me who in the NRC Office of Inspection and Enforcement to contact for further information about availability of these air photos?

Thank you again for the copy of your report. If revisions are made in the March 30, 1979 draft as a result of comments received would you please send this Office a copy of the revised report?

Sincerely,

John Sherman

John Sherman
CEIP Administrator

JS/jad

Georgia Department of
Human Resources

W. Douglas Skelton, M.D./Commissioner



47 TRINITY AVENUE, S.W., ATLANTA, GEORGIA 30334

May 2, 1979

Stephen N. Solomon, Ph.D.
State Programs Officer
Office of State Programs
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Dr. Solomon:

Your recently transmitted Draft Report "Beyond Defense-in-Depth: Cost and Funding of State and Local Government Radiological Emergency Response Plans and Preparedness in Support of Commercial Nuclear Power Stations, NUREG-0553 March 30, 1979" has been received and reviewed with interest.

The following comments and observations are considered germane to the report from the viewpoint of the Radiological Health program in the State of Georgia:

- (1) Governor Busbee on April 5, 1979 assigned the primary peacetime radiological responsibility for emergency services to the Department of Natural Resources (Environmental Radiation Program).
- (2) It appears that the Radiological Health personnel will continue to play a significant support role in responding to Nuclear incidents and emergencies.
- (3) Recently, a supplemental budget request for approximately \$70,000 was submitted for emergency response requirements. This request was not forwarded to the legislature during this budget session and remains a viable requirement for the Georgia Radiological Health Unit.
- (4) Experience has indicated that 2 to 3 men per year are required to prepare, coordinate, and implement an emergency response plan. This effort represents an expenditure of \$50,000 to \$60,000 per year.
- (5) In addition, the voluminous writing and printing associated with an emergency response plan points toward the desirability of a \$20,000 contract with Georgia Tech to accomplish same.

Stephen N. Solomon, Ph.D.

-2-

May 2, 1979

Provided I may be of further assistance, please do not hesitate to contact me.

Sincerely,


Charles F. Tedford, Chief
Radiological Health Unit

CFT:nr

**Commonwealth of Virginia
Office of Emergency and
Energy Services**

George L. Jones
State Director
1100 Amphlett
Regulatory Coordinator

COMMONWEALTH of VIRGINIA

State Office of Emergency and Energy Services

June 12, 1979

Stephen N. Salomon, Ph. D.
State Programs Officer
Office of State Programs
Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Dr. Salomon:

Thank you for your letter of May 21, 1979, which forwarded a copy of your draft report, NUREG-0553.

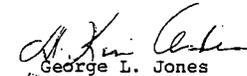
While we have not been able to make a detailed analysis of the report in the time allotted, we certainly agree that:

- a. The States and the local governments require Federal financial assistance to develop and maintain appropriate radiological Emergency Response Plans, for staff training and for the development and conduct of annual training exercises.
- b. Improved monitoring, communications and protective equipment and warning systems are required; and that Federal funds should be made available to procure and maintain these equipments and systems.
- c. A full-time Emergency Services Coordinator is needed by each local government that has a nuclear power plant within its boundaries; and that this position should be 100% Federally funded.
- d. A full-time radiological Emergency Response Planner is required on the State staff to coordinate the development and maintenance of State and local government radiological Emergency Response Plans, unit and individual training programs and annual training exercises. 100% Federal funding is also recommended for this position.
- e. Increased NRC license fees would be an appropriate source of funds to cover the above costs.

Page 2

I trust that the above comments will be helpful.

Sincerely,


George L. Jones

GLJ/ESK/cls

Sacramento County
Department of General Services

John J. Drabic, Director



COUNTY OF SACRAMENTO
DEPARTMENT OF GENERAL SERVICES

May 7, 1979

Dr. Stephen N. Salomon
State Programs Officer
Office of State Programs
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Dr. Salomon:

This is in response to your request of April 16, 1979 for comments on the draft report entitled "Beyond Defense-in-Depth--Cost and Funding of State and Local Government Radiological Emergency Response Plans and Preparedness in Support of Commercial Nuclear Power Stations, NUREG-0553, March 30, 1979.

First let me say I appreciate receiving a copy of your draft report and having the opportunity to make comments. I have enjoyed very much reading the report. It is well written, with numerous interesting comments, and it deals with the subject of emergency planning and preparedness that you have recognized as not having received adequate attention nor funding in the past.

In the opening paragraph of Part I - Executive Summary, page I-1, you define your report, "Beyond Defense-in-Depth" which proposes improvements to offsite emergency response planning and preparedness, as a contrast to the concept of "Defense-in-Depth" which has emphasized prevention of accidental radioactive releases by means of plant design, construction and operation. To me, the word contrast has negative connotations; it implies opposition. I would prefer to see the relationship presented in more positive terms--as being a strengthened supplement to Defense-in-Depth. In my judgment, the best protection of public health and safety from nuclear power plant risks requires a proper balancing of both approaches--prevention and planning/preparedness. I think you are to be commended for recognizing (prior to the T. M. I. incident) that throughout the nation there has not been a proper balance between the two; that the planning and preparedness element had not received adequate attention; and for developing a fairly well thought out proposal for strengthening it. If it's true that there is something good in everybody and everything, I hope that one of the good things to come out of the T. M. I. experience will be the recognition by the NRC and other federal and state agencies of the serious need to strengthen emergency planning and preparedness along the lines you have proposed.

Dr. Stephen N. Salomon

-2-

May 7, 1979

The majority of your report contains considerable material on past, current and future funding for nuclear power plant and other emergency planning. Despite the data gathering problems you encountered, I think you have covered this complex subject very well. In Chapter 8 - Future Alternative Funding Mechanisms (page II-102), I think your comments under Continuation of Current Hybrid Approach are entirely accurate and appropriate. If anything, I would suggest, or request, that the words: "inadequate, sporadic, uncertain and frustrating" in the first paragraph either be capitalized or underlined, and that you add the following: "particularly as it relates to D. C. P. A. funding."

In a more serious vein, let me respectfully suggest that you consider expanding your remarks in the first paragraph on the top of page II-104. These remarks are applicable to all emergency planning activities and not just to nuclear power plants. In this regard, let me again state that you should be commended for your recognition of the fact that additional funds are going to have to be injected into federal, state and local emergency planning and preparedness programs if we are to achieve the required balance between protection and preparedness in the interest of public health and safety. Until this fact is recognized and accepted at all government levels, any discussion regarding various alternative funding mechanisms will merely be an exercise in futility.

With respect to the seven proposed program elements outlined on page I-1 of the Executive Summary, my overall reaction is favorable. I think you have fairly well identified the key specific areas that need strengthening, and that you have developed a reasonably well-rounded program to improve those areas. The one program element that I have some questions about is your proposal for \$40 million to F. E. M. A. for funding of certain local government emergency planning agencies at 100%. This is discussed briefly on page II-2 and would apply to all impacted jurisdictions within the proposed new inhalation pathway 10 mile EPZ.

With respect to the \$40 million F. E. M. A. element of your proposal, I have both positive and negative feelings. First, my negative feelings. It seems to me that there is a very consistent opinion by numerous federal, state and local agencies that the federal effort for civil defense and the hazy off-and-on dual-use concept over the past several years has been--to quote the Library of Congress study--a charade. When considering the limited funding involved; the tremendous amount of red tape and excessive paper work; the long, wavering, uncertain history of federal guidance and direction; and lack of any real progress to date, I find it somewhat difficult to generate any personal enthusiasm for providing additional funding for local emergency planning and preparedness through F. E. M. A. Despite that feeling, it may be better to do it that way than to establish a new funding process in NRC.

Dr. Stephen N. Salomon

-3-

May 7, 1979

I would also like to suggest an alternative to your proposal of 100% funding of local agencies in the 10 mile EPZ. First, I don't think it would be appropriate to use funds extracted from the nuclear power industry to fund the local share of the cost for emergency planning and preparedness activities that relate to risks other than nuclear power plants. Secondly, I think the proposed additional funding should cover local planning costs for both proposed new E. P. Z.'s. Although this would include more local agencies than your proposal, I don't think it would increase your \$40 million estimate.

I think you did an excellent job in covering the various funding alternatives. With reference to your preferred approach, discussed on pages II-115 and 116, it's probably as good as any; and in the aftermath of TML, it may well be the most viable. One possible alternative might be a combination of increased NRC license fees and state levied energy taxes. This might spread the burden a little more, and the potential of getting additional federal funds might serve as an inducement for more states to levy an energy tax.

For your information, I am also sending you a copy of my report entitled "Response to Governor's Review Panel Questionnaire on Nuclear Power Plant Emergency Planning." In this document, I would like to call your attention to my three comments on pages 2 and 3 of my transmittal letter and to my comments on page 5 regarding the notification/communications process. This latter item is extremely significant and requires definite improvement.

As I mentioned to you on the telephone, I am very seriously interested in putting together a proposal for a joint federal-state-local project to develop a more adequate emergency response plan for Rancho Seco. This project would include many of the elements of your proposed program. Since the NRC/LLL phase I study on the feasibility of installing ARAC at Rancho Seco will be completed this month, it would not take too much effort to proceed with installation and implementation of a site facility at Rancho Seco. Some automated dose measuring equipment is already in place. In addition, there are 19 offsite locations where dosimetry equipment has been installed. If one of your proposed NRC planning consultants could be made available, we would put together a team of federal, state and local personnel to develop an upgraded emergency plan for Rancho Seco covering both the inhalation pathway and ingestion pathway emergency planning zones. In doing this, we could also evaluate the adequacy of these zones as proposed in NUREG-0396 as compared with planning areas developed on a site-specific basis through use of ARAC.

As for timing, I think it would take about a year to complete the project, and in the process some answers could be developed for many of the still unanswered questions. When completed, it could perhaps serve as a

Dr. Stephen N. Salomon

-4-

May 7, 1979

national model for a reasonable yet realistic nuclear power plant emergency plan. One very important result could be a better definition and understanding of the roles and responsibilities of all the federal, state and local agencies in an emergency response. If this could be accomplished, then perhaps we could have a coordinated team approach with all agencies working toward the same goal and objective during an actual emergency.

At this stage, I'm not quite sure how to proceed with this. I have discussed the idea with some State, SMUD and County staff and they all think it is worth pursuing. Since the ARAC program at LLL operates primarily under a contract with DOE, I am planning to contact their operations office in San Francisco to discuss it with them. Any thoughts you might have on this will be appreciated.

Steve, let me close by again saying I think you have done an excellent job with this report. You have some good ideas and I hope these comments are of help to you. Good luck in putting your report in final form for the Commission. If you have any questions, or if I can be of any further assistance, please don't hesitate to give me a call.

Best regards,



H. B. White
Emergency Operations Coordinator

HBW:mt

Attachment

cc: Members, Board of Supervisors
County Executive
John Drabic
Alex Cunningham
Dan Richard, Jr.
Don Martin
Leonard Rosen

**Columbia County, Oregon
Office of Emergency Services**



OFFICE of EMERGENCY SERVICES

COURTHOUSE,
ST. HELENS, OREGON 97051

May 7, 1979

Phone: 503 397-2100

TO: Stephen N. Salomon

OM: John T. DeFrance

My comments will reference the particular page number of the draft regulation. Please excuse the informality of my letter; I hope these comments will assist you. Thank you.

Page	Comment
II-41	<p>Despite what the maps may show the warning sectors in Columbia County extend out only 2 1/4 miles from the plant.</p> <p>Concerning the estimated cost of the Columbia County plan: the first year (75-76) that this office was funded full time the budget was \$17,715 of which \$3,000 was contributed by PGE. What was the cost to develop the plan? I really don't know...the year and one-half prior to full time funding the county spent about \$6,000 for this office. During that time this office spent 80%+ of its time on the plan. Most of the time the 75-76 year was spent on the plan also.</p>
II-53	<p>\$1,000 cost per jurisdiction for updating plans annually is too low a figure, especially if it includes mainly the yearly exercise. After the exercise some time is always spent reviewing the exercise results/critique. This always results in some revision of the plan--in some cases involving only a few pages, in others involving whole sections of the plan. This can be very time consuming and costly. I would guess a better figure would be \$3,000-\$4,000.</p>
II-91	<p>Indeed, DCPA Personnel and Administrative funds are becoming more difficult to obtain. The DCPA funding level for P&A funds is not keeping up</p>

with the demand for those funds. As additional counties in Oregon want to join the "civil defense" program the funds are spread even more thinly. In the past Columbia County has received 50% of those expenditures eligible for reimbursement. This next year, FY78-79, it appears that we will only receive about 40% funding. Perhaps DCPA should increase its P&A funding for those counties with a nuclear facility at the expense of other counties....? That is a tough question and I do not have a good answer or recommendation. But we will need additional funds from some other source (other than county resources) if we are to plan out the 10 miles suggested in the NRC/EPA regulation.

II-112

I am very interested in the concept of using the NOAA radio for warning/notification of residents around a nuclear plant. This is similar to some talk we have had here several years ago. We did not pursue it because of the anticipated cost. I would like to receive what ever information you have concerning this, especially information about the reimbursement of cost from NOAA.

Your report (regulation) is well done. I am glad someone has at last recognized the importance of funding needed to accomplish our tasks. Funding from NRC would perhaps be an appropriate means of getting the funding we need--at least for the planning out the 10 miles in the EPZ's. Thanks.

**Citrus County
Department of Disaster Preparedness**

Citrus County



Department of Disaster Preparedness

GEORGE J. ALLEN, DIRECTOR

Courthouse Square • Inverness, Florida 32650 • Office Phone (904) 726-8500, Extension 10 • Home Phone (904) 795-5120

May 17, 1979

Mr. Stephen N. Salomon, Ph. D.
State Programs Officer
Office of State Programs
Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Salomon:

The following comments are submitted for your consideration concerning the draft report "Beyond Defense-in-Depth."

Part I, Executive Summary: Some of the information and ideas presented are refreshing and present a new outlook. I feel the risk of a meltdown is being over emphasized. Chances of a nuclear war are more likely. Next month I will be going to Japan and most Americans can't imagine that the two cities there have rebuilt from out atomic bombs. I am not quite sure what and whose "preferred approach is recommended" and what the alternatives are. While agreeing with much of the report, I am not sure I would support the \$5 million for 10 NRC Regional Offices to act as a big brother. The more agencies involved the greater the confusion, in-fighting and costs in radiological planning and response.

While I am not affected by your authority or responsibility on-site, I have some reservations about NRC approving local off-site plans. While not an attorney, isn't the Board of County Commissioners an extension of the State Legislature? Doesn't the responsibility for plans and evacuation rest with the local and State Government? What about State and local sovereign rights? Would it be possible for a local director to stall the plan development, keeping a half billion dollar nuclear plant shut down? The industry should not be subjected to such possibilities. While the NRC has regulatory authority on-site, it should remain in a technical assistance role off-site. Citrus County's plan was a part of the State Radiological Plan, which has been concurred in by NRC.

Most locals would probably welcome NRC assistance in obtaining the proper kind of dosimetry and survey instrumentation. Civil Defense CDV-742 O-200 R dosimetry are not practical for nuclear reactor incidents. The CDV-138 is not available in sufficient quantities or at reasonable prices (CDV-742). Perhaps NRC should buy instrumentation in bulk quantities and then make it available to State and local government at cost.

Preparedness is Survival

Page Two
Mr. Dalomon
May 4, 1979

The statement about 100 percent Federal funding for the director, with a \$20,000 minimum salary, I read with interest. In some states it may help to attract a better staff, but Florida Counties have adequate and dedicated staffs. Some need training, which is an important part of the NRC Program. Most could perhaps command higher salaries in other fields but feel dedicated to the program and have a sense of job accomplishment. The cost estimates presented exceeds the entire annual budget for Defense Civil Preparedness Agency (DCPA).

Chapter 2: Your statement that the "Civil Defense Program is far from complete", is very accurate. It is unfortunate that so many view Civil Defense as a man with a hard hat, whistle and a bucket of sand. Even The Honorable Robert Graham, the Governor of our great State, believes Emergency Operating Centers to be a place where Government officials hide in the security of the E.O.C. while the public is unprotected. Let me commend you for viewing the EOC as the nerve center (Communications, Command and Control) that may save the unprotected public. The importance of tying all communications together for effective coordination cannot be over emphasized. Communications was out for hours during the Jamestown flood. How many lives would have been saved if effective communications could have been maintained? I will be writing in an effort to bring this matter before the National Governor's Association this Fall. Mr. David McLaughlin with the President's Reorganization Project could brief them on the FEMA Concept and the problems with fragmented operations. You may be in a position to provide some support or input in this area.

Chapter 3: Reference was made concerning a need for a better system for notifying off duty personnel. Communications and low level radiation instruments are needed. Disaster Preparedness budget requests will list items contained in the draft report:

Radiological instrumentation (Low-Level)	\$5,000.00
Portable Walkie-Talkie System	5,000.00
2 channel with repeater for use of Monitorings Teams thru Commo Van	
Protective Clothing & Equipment	1,000.00
NOAA Storm Alert Radio Sets (100 ea)	4,000.00
Pagers for Commissioners/Constitutional Officers/Staff for EOC	*1,000.00
*Includes EOC Staff Only-Others to be included in their respective budgets.	

Since discussing a proposed siren system with you for the Plume Exposure Pathway, I believe that the NOAA Storm Alert Radio may be less costly and more effective. One hundred radio sets at \$40.00 each would provide ample coverage at this time. If approved, each home in the Plume Exposure Pathway would be issued a radio to receive warnings for all emergencies.

Page Three
Mr. Salomon
May 16, 1979

I agree with your statement that "very few local official's have kept good records of manpower." This is in reference to liaison meetings, analysis, writing, reviewing and finalizing such plans. At the local level so many plans are inter-related that it would be difficult to break it down for accounting purposes. In my previous paragraph on the NOAA Storm Alert Radio System-it would also be used for severe weather warnings i.e. Hurricane, Tornado, etc, so how should I break down the costs. The cost of maintaining good records in this area must be weighed against the benefits. If additional record keeping is required, additional manpower would be required. Perhaps a full-time person to plan, train, exercise and develop resources to fulfill local government responsibilities with regard to nuclear plants would be desirable.

Chapter 4: This county believes in the economy of volunteer participation while the paid personnel of Citrus County Sheriff's Department, Health Department, Road and Bridge Department, Human Services, Agriculture, School Board, and the City of Crystal River do a great job, I am particularly impressed with our volunteers. Mr. Dean Freeman and Mr. Lane Stark are our RADEF Supervisors. A local Citizen Band Radio group called the Citrus County Communications Task Force do a great job of radiological monitoring and communications. Connell Heights, DeRosa and Crystal River Fire Department handle decontamination and their response has been outstanding. The main complaint of volunteer groups is that the training programs seldom have courses available and convenient for volunteers. I completed the Radiological Emergency Response Operations Course about a year ago, which was excellent. The other members of our response team have been unable to obtain space for attendance. Your assistance in this matter would be appreciated.

I believe that decision making and control should a joint responsibility of State and local government. The Board of County Commissioners have a responsibility to the citizens of this county to protect their lives and property. We should not rely heavily on industry or State for proper judgement. We need a minimum capability to advise our citizens of proper protective actions. While I view it improper for industry to be shutdown for lack of a local plan over which they have no control, our primary responsibility for such a plan rests with the local government. The Board of County Commissioners having this responsibility, should assure that a suitable plan has been developed to protect the public.

I don't advise counties to invest in Atmospheric Release Advisory Capability (ARAC) or ring systems. The survey teams with low level radiation instrumentation are the best choice for local government. The computer systems and the ring systems would still require some monitoring by survey teams to verify projections. The cost is \$100,000.00 or more and the state of art has not been developed and tested as fully effective. We have had short response times for deployment of survey teams and with improved communications they should be very effective.

Citrus County plans to deploy a version of the ring system only if it is provided with Research and Development Funds. A copy of a letter from the Board of County Commissioners, supporting this Research and Development Project is attached. While the project has merit, radioactive gases may leap or jump the instrument, as a result of atmospheric conditions. In our situation, Ruskin can't accurately forecast our weather conditions, which could have a great impact on decision making.

Page Four
Mr. Salomon
May 14, 1979

Citrus County Plans to take a positive approach on its planning. Copies of the overflight photos have been requested (copy attached). When received we plan to upgrade our information files on area residents in the Plume Exposure Pathway. While not limited to a particular distance, we intend to communicate with every family that lives within 5 miles. This communication may be in the form of a liaison visit which is most desirable. Telephone or written communications may be utilized for those not home at the time or for other reasons. The purpose is to explain protective actions in the event of an emergency, inform residents of their quadrant locations, collect data of an important nature and answer any questions regarding the plan. Public information is an important part that is often overlooked.

We have less than 100 families living in the radius. It is proposed that each family be provided with a NOAA Storm Warning Radio which would broadcast warnings in the event of an emergency. I have included funds for this capability in my budget request for FY 80.

With low level radiation instrumentation, improved radio communications for radiological monitoring teams, and more emphasis on training, we should have an adequate plan and staff. We will continue to strive to improve our response capability, and resources.

While we may not be in total agreement, the draft report contained many items of interest. It was with great interest that I read about the ten outstanding examples, which included Crystal River 3, of the sites sampled (Page 11-68). If you should desire further information or have any questions, please do not hesitate to call on me.

Sincerely,


George J. Allen,
Director

GJA:rch

Enclosures: 2 As Stated

BOARD OF COUNTY COMMISSIONERS
CITRUS COUNTY

COURTHOUSE SQUARE - INVERNESS, FLORIDA 32650 - (904) 726-2881

April 23, 1979

State Director
Division Disaster Preparedness
1720 South Gadsden Street
Tallahassee, Florida 32301

Dear Sir:

The Board of County Commissions have been informed that a commercial electronics firm has demonstrated a new concept in remote radiological monitoring to the Regional Office, Defense Civil Preparedness Agency.

This new concept would detect reportable radiation levels and alert personnel at a remote location. Personnel on duty at the remote location would be able to read the radiation level which would be received by an automatically activated radio.

Citrus County has been in the process of developing an emergency response team and a communication van for support. Our Emergency Operations Center is manned 24 hours per day. We have been credited with having an adequate plan and response to Florida Power Nuclear Plant Exercises. In view of our demonstrated initiative in this area, request consideration be given to testing this new concept in Citrus County.

We would encourage you to speed up this Research and Development effort. We are willing to make changes in our plan to incorporate these monitors as an intrigal part of it. Our staff in Disaster Preparedness would be directed to assist in the testing and render support within their capability.

A motion was made in open session, seconded and passed supporting this request. If Citrus County can be of assistance in this matter, please contact our Disaster Preparedness Director.

Sincerely,



(Mrs.) Jean Grant, Chairman
Board of Citrus County Commissioners

JG:rch

Citrus County

Department of Disaster Preparedness



GEORGE J. ALLEN, DIRECTOR

Courthouse Square • Inverness, Florida 32650 • Office Phone (904) 726-9500, Extension 10 • Home Phone (904) 795-5120

April 23, 1979

Chief
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Sir:

Request the two types of photos representing distances of 6 and 11 miles across, respectively of the Crystal River Nuclear Plant, taken under contract between EG & G and NRC with a Haselblad camera, be made available to this office for distribution (1 Set each) to the following local government organizations:

<u>Counties</u>	<u>Cities</u>
Citrus County	Crystal River
Levy County	Yankeetown
	Inglis
Marion County	Not Applicable

I have promised the representatives of the counties or municipality that I would attempt to acquire the aerals for distribution. If a Mylar Negative is available, we would be happy to run our own copies and make distribution.

Thanking you in advance for your assistance in this matter. If I can be of assistance or if you have any questions, please feel free to call on me.

Sincerely,


George J. Allen,
Director

GJA:rch

Preparedness is Survival

**St. Lucie County
Office of Disaster Preparedness**

ST. LUCIE COUNTY

Office of Disaster Preparedness Coordinator

PHILIP J. RODI
Coordinator

408 BROWN COURT
FORT PIERCE, FLORIDA 33450
Phone 461-5201

May 22nd, 1979

United States Nuclear Regulatory Commission
State Programs Officer
Office of State Programs
Washington, D.C. 20555

Attention: Stephen N. Salomon, Ph.D.

Subject: Draft Report - Beyond Defense-In-Depth:
Cost and Funding of State and Local Government
Radiological Emergency Response Plans and
Preparedness in Support of Commercial Nuclear
Power Stations, NUREG-0553, March 30th, 1979

Dear Sir:

I would like to make the following comments
on the contents of this report.

pg. I-1 \$5 million for 10 Office of State programs -
This money could be better spent at the State
government level. We do not need any additional
Federal controls.

License fee to cover costs - this concept has
merit. We feel that the fee needs to be paid
directly to the County wherein the plant is
located. It is a well known fact in government
that when monies are paid to a second party, by
the time it reaches its intended destination, there
is very little left.

pg II-27 - Florida viewing themselves as ade-
quately equipped. This is not necessarily true.
Up to date instrumentation is badly needed.

pg II-53 - Paragraph 3. - Overflight photos of
the site are available. This is the first infor-
mation received that there are such photographs.

Pg. 2

These photos and all other information such as
the quarterly environmental surveillance infor-
mation should be given to the local Disaster
Preparedness agency for their use in planning.

pg. II-69 - paragraph 2. - Independent capability -
Public confidence is worth the cost. These are
the people who are "paying the freight", and
are entitled to know the facts.

Case in point - The Three Mile Island fiasco.
If the true facts had been released by the proper
people, it would not have received the adverse
publicity resulting in lack of confidence in
that nuclear power facility, state and local
government officials, and the Nuclear Regulatory
Commission people.

pg. II - 79 - Land Use Planning-Change future and
present zoning to inhibit population growth
within the ten mile EPZ. Site should be limited
to those areas of state where this is possible.
At present sites the utility to buy up the
surrounding area encompassing the ten mile EPZ.
In the case of plants such as St. Lucie I and II
which is on the ocean and river, turn all this
into a recreational area.

COMMENTS:

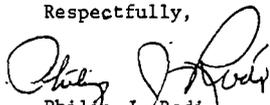
There is an immediate need for the NRC to keep
in closer touch with the local jurisdictions
on all matters concerning a nuclear power plant
in the County.

There are presently ten DCPA regions in the
country. If there is a need for NRC personnel
as consultants, why not have one at each of
these installations which are already in place
and thereby cutting cost.

pg. 3

Funding is the most important factor for County governments. In order to properly administer the various planning and upgrading of present planning which have been put into being by the NRC, the NRC should resolve the source of the funding.

Respectfully,


Philip J. Rodi

PJR/pw

**Dothan/Houston County
Office of Civil Defense**



OFFICE OF CIVIL DEFENSE

JAMES W. ALDRIDGE
COORDINATOR
794-3720
ST.
793-1114 Ext. 240

DOTHAN-HOUSTON COUNTY
EMERGENCY OPERATION CENTER
BASEMENT HOUSTON COUNTY
COURT HOUSE
P. O. BOX 1870
DOTHAN, ALABAMA 36021

PHILIP J. RODI
ASSISTANT DIRECTOR
794-3720
ST.
793-1114 Ext. 240

April 26, 1979

Stephen N. Salomon, Ph. D.
State Programs Officer
Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Salomon:

After reviewing the draft report of Beyond Defense-In-Death, I find that the items pertaining to our area are very well stated. The idea of funding, from some agency, and the planning and exercising and testing of Nuclear Plant Evacuation Plans is of utmost importance.

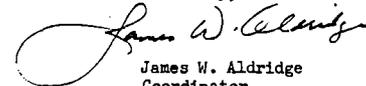
I feel that some equipment should be available on the local level with trained manpower. This will enable the local governing agencies to make a determination of what action to take without waiting for the plant operator to decide whether or not the situation is considered an emergency.

In a rural area, such as ours, the news media, door to door notification, and local law enforcement, are the forms of evacuation we have had. Good Public Information Plans are essential in a potential disaster such as the Three Mile Island incident.

We feel, since the incident at Three Mile Island, that our plan would have to be rewritten with a great deal of involvement from the actual agencies that will be out in the field evacuating. Again, the time required by the different agencies, away from their normal departmental affairs, is questioned by each department. With proper funding, the various departments could develop a very realistic and comprehensive plan with the advise and help from this office.

We hope that your report may be a step in the right direction.

Sincerely,



James W. Aldridge
Coordinator

JWA/kg

"CIVIL DEFENSE IS PLANNING TO SAVE YOUR LIFE"

**Blakely/Early County
Civil Defense Department**

Civil Defense Department

Blakely-Early County

Blakely, Georgia

31723

912-723-3029

27 April 1979



**JAMES B. MANION
CIVIL DEFENSE DIRECTOR**

TO: Stephen W. Salomon
State Programs Officer
Office of State Programs
Nuclear Regulatory Commission
Washington, D.C. 20555

SUBJECT: Beyond Defense-In-Depth Report

In response to your letter of 16 April 1979 and subject report dated 30 March 1979, the following comments are submitted:

Reference training page II-22. Radiological monitoring courses are conducted at the local level; however, due to a large turnover this training is a continuing function on the part of local civil defense units.

Reference training page II-39. It is felt that the radiological monitoring courses conducted at the local level would also be considered training for Radiological Emergency Response Plans.

Reference communications systems page II-63. At the present time, sites with two state planning appear to have a notification problem. For example, current notification procedures for Alabama/Georgia are: In the event of an unplanned release, the nuclear plant notifies the Alabama Radiological Emergency Duty Officer. The duty officer then notifies the Georgia Radiological Health Unit. The Georgia Health Unit notifies the Georgia State Civil Defense Office and they then notify the local civil defense unit. The local civil defense unit is located approximately fourteen mile from the nuclear plant. It would appear that this is a time consuming notification system. If feasible, a system involving simultaneous notifications would be more desirable.

If I can be of any further assistance to you on this matter please call or write to the above address.

James B. Manion
JAMES B. MANION
Civil Defense Director
Blakely-early County

**Kentuckiana Regional
Planning and Development Agency**

kipda

**Kentuckiana Regional
Planning and Development Agency**

505 WEST ORMSBY AVENUE
LOUISVILLE, KENTUCKY 40203

PHONE
(502) 587-3804

April 26, 1979

Mr. Stephen N. Salomon
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Salomon:

Recently the Kentuckiana Regional Planning and Development Agency has become involved in the planning for disaster and emergency situations. The emphasis on planning has been directed toward Oldham and Trimble counties in the Commonwealth of Kentucky.

These two counties are concerned with the potential hazards that could occur with the construction of the Marble Hill Nuclear Power Plant. Should the construction be completed, Trimble County, Kentucky is located directly across the Ohio River from the site. Oldham County, Kentucky is located ten miles south of the proposed site. The agency and the citizens of these two counties are attempting to prepare themselves for a situation that could occur as was experienced at Three Mile Island in Harrisburg, Pennsylvania.

It has been brought to our attention that you drafted a plan (NUREG-0553) on March 30, 1979 that is to be considered by the U.S. Nuclear Regulatory Commission. The title of the proposal is *Beyond Defense - In - Depth*, and concerns the cost of funding state and local government radiological emergency response plans and preparedness in support of commercial nuclear power stations.

The agency is also attempting to address the same situation. I would appreciate a copy of your proposal for our staff to review. Your consideration in sending us a copy of your proposal would be greatly appreciated.

Sincerely yours,

Neil Farris
Neil Farris
Executive Director

NF:dv

cc: file

BULLITT - HENRY - JEFFERSON - OLDHAM - SHELBY - SPENCER - TRIMBLE COUNTIES, KENTUCKY; FLOYD AND CLARK COUNTIES, INDIANA

**Cowlitz County
Department of Emergency Services**



Cowlitz County
Department of Emergency Services

July 23, 1979

Hall of Justice
312 South First West
Kelso, Washington 98626

Telephone (206) 577-3130

Stephen N. Salomon
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: "Beyond Defense - In Depth"

Dear Mr. Salomon:

This letter is sent in response to your study "Beyond Defense - In Depth". First, let me compliment you on the in-depth study. So often we on the local level take time to work with State or Federal personnel and receive no further contact.

There are several points which you brought out in the study that were of particular interest. You noted that Cowlitz County, in the State of Washington, receives no financial support from State or Federal government nor P.G.E.'s Trojan facility. This is true and I want to reiterate the financial burden this places on Cowlitz County.

In 1977 Cowlitz County tested all aspects of the Cowlitz County Peacetime Radiological Incidents Plan. For your information I am sending you a copy of the cost breakdown of the expense to local government agencies. This document was presented recently to the Washington State Energy and Utilities Committee. The document does not involve cost to American Red Cross personnel, Port of Kalama and other private agencies.

As a result of the Three-Mile Island accident, the local chapter of the American Red Cross wrote a letter to the Emergency Services Council of Cowlitz County requesting that a warning system be developed. At the present time, there is no adequate system to warn the public.

A meeting has been set up for legislators, county commissioners, elected city officials, State Department of Emergency Services, DCPA Region 8 and Trojan representatives. The NRC is cordially invited. Meeting objectives are to identify the need for an adequate warning system, determine the type of system, determine whom should be alerted and where the funding for this system can be secured. The meeting is scheduled for July 27, 1979 in Kelso at 10:00 a.m. in the Hall of Justice Training Room. If you can attend or have a representative attend it would be greatly appreciated.

CIVIL DEFENSE

SEARCH AND RESCUE

DISASTER RELIEF

Stephen N. Salomon
Page 2
SUBJECT: "Beyond Defense - In Depth"

Another point in the study I would like to address is on pages 11-92 and 11-93. The list contained on page 11-93 is not prioritized.

I would like to request that the NRC establish a provision to assist this county in receiving funding from P.G.E for a half-time person to assist with Trojan-related planning, correspondence, exercises, etc. as well as funds to provide a warning system.

Thank you again for your assistance to local government.

Sincerely,


Lucinda A. (Lou Ann) Pederson
Director

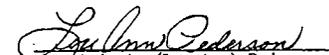
LAP:vjw

Enclosure

Cowlitz County Emergency Services
Hall of Justice
312 S. First West
Kelso, Washington 98626

COST TO LOCAL GOVERNMENT
FOR
TROJAN EXERCISE AUGUST 1977

Cooperative Extension Service	\$ 361.62
Communications Center	1,025.00
Cowlitz County Assessor	4,784.55
Central Stores	210.00
Department of Emergency Services	3,444.80
Cowlitz County Engineer	418.74
Cowlitz County Public Works RADEF Officer	1,794.60
Cowlitz County Sheriff's Office	10,000.00
Cowlitz County Commissioners	616.59
Walt Barham, Manager, City of Longview	184.00
Jim Springer, Mayor, City of Kalama	25.00
Kelso Fire Department	120.00
Kelso Police Department	90.00
Longview Fire Department	135.00
Longview Police Department	708.60
Longview Public Works	288.00
Health District	317.00
Equipment Supervisor	168.00
Cowlitz County Parks & Recreation	<u>182.00</u>
TOTAL	\$24,873.50


Lucinda A. (Lou Ann) Pederson
Director

**Federal
Government**

**Defense Civil Preparedness
Agency**



DEFENSE CIVIL PREPAREDNESS AGENCY
WASHINGTON, D.C. 20301

May 7, 1979

MEMORANDUM FOR Mr. Stephen Salomon
State Programs Officer
Office of State Programs
Nuclear Regulatory Commission
Washington, D.C. 20555

SUBJECT: Draft Report - Beyond Defense-In-Depth: Cost and Funding of State and Local Government Radiological Emergency Response Plans and Preparedness in Support of Commercial Nuclear Power Stations, NUREG-0553, March 30, 1979

Thank you for the opportunity to view this draft report. It is very complete and well done. However, in the light of TMI, I believe that the cost estimates are very optimistic.

I have one specific comment on Page II-61 - Second Paragraph: The assumption that no costs are assigned to instrumentation is not valid. The Brookhaven project does not involve "modification" of civil defense instruments but rather using standard instruments with auxiliary simplified air sampling equipment which must be procured. As a result, there may be substantial costs associated with instrumentation.

I am passing your report along to Ed Williams, Chairman of the Interagency Task Force on Emergency Instrumentation, for comments. I am sure that you will hear from him.


Carl R. Siebenbrunn
Staff Director
Detection and
Countermeasures Division

**National Oceanic and
Atmospheric Administration**



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
~~XXXXXXXXXXXXXXXXXXXX~~
Office of Coastal Zone Management
3300 Whitehaven Street, N.W.
Washington, D. C. 20235

June 1, 1979

Dr. Stephen N. Salomon
State Programs Officer
Office of State Programs
Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Dr. Salomon:

I've received and briefly reviewed your draft Preparedness document. The current task force effort in NOAA focuses on natural hazards in coastal areas, primarily from hurricanes and related storm surge flooding, erosion, subsidence, etc.

NOAA's general role focuses on hurricane and weather-related warnings, technical information and assistance in areas of environmental information and assistance, mapping assistance, and some financial assistance for planning in coastal areas. The enclosed material better describes our coastal hazards activities and the Coastal Zone Management Program, including the Coastal Energy Impact Program. There are circumstances where the basic CZM Program, providing grants to states for a full range of planning and resource management activities, and the CEIP Program, providing some limited planning assistance for coastal related energy impacts, could address your draft proposals. However, this should not be considered a primary or even major source of funding and your reference to the expansion of the CEIP Program to the Nation's rivers is unfounded. Both of these programs provide assistance to the states and primary allocation and use is generally within their discretion.

Drawing from my experience on the NOAA Task Force on Natural Hazards in Coastal Areas, your draft does raise some general questions.

- o Is there some categorial system for determining and identifying the degree of risk at certain sites under certain circumstances (intensity, location, probability, etc.)? It's difficult to plan without having a good understanding of the real risk, both in terms of probable frequency, intensity, and geography.



- o Are there trade-off mitigation approaches such as evacuation, structural design and protective measures, or others?
- o Is there an assumed governmental responsibility to fully support the costs of activities resulting from siting or is it shared with the operating firm, etc.?
- o Assume the Federal Emergency Management Agency is fully organized (October?), can radiological preparedness and response planning, particularly in coastal areas, be coupled with all other federally assisted activities for civil defense, national hazards, and man-made hazardous activities?

Sincerely,


 Richard A. Foster
 Deputy Assistant Administrator
 for Administration

Enclosures.

NRC
Jaske(Office of State Programs)



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 WASHINGTON, D. C. 20555

MAY 16 1979

MEMORANDUM FOR: Stephen N. Salomon
 FROM: Robert T. Jaske
 SUBJECT: COMMENTS ON NURET-0553 (DRAFT) "BEYOND DEFENSE IN DEPTH"
 DATED MARCH 30, 1979

This document is a timely and important piece of work. It provides perspective on a critical component of emergency response planning, and it fulfills the original study objective, that of getting a better basis for relating the impact of NUREG-0396 on the State and local governments. Because it deals with uncertainty, some reviewers may be cautious about the depth of the data base. With respect to the costs of organization and training I do not share this view, and I urge you to press for early release as a companion piece to NUREG-0396.

I have a few suggestions of two types, those which might be useful in the short term and a second group which might qualify for additional, extended study.

Pages 1-1,2

The executive summary is not clear as to the division of effort between bringing plans up to existing guidance levels and those required for NUREG-0396. The critical recommendations for staffing, impact on licensing, and the use of advanced technology bear on either approach and might be better stated in the summary.

The fee schedule and the implication of a planning fund based on present worth economics could be further clarified by presentation of a summary of capital and recurring cost in annual dollars. Not every reader will understand present worth economics, and the subject is too important to permit confusion in the executive summary.

I believe the summary might be improved by organizing into three levels of actions. They are:

- a) Actions which the NRC can take under present rules.
- b) Actions requiring rule making.
- c) Actions requiring legislation.

Stephen N. Salomon

- 2 -

Part II-5

Introduction of the EPZ at this point as one of the objectives of the State Programs inquiry would assist the reader in anticipating the later thrust of the document. It would lay a better foundation for the successive impacts of later chapters.

Page II-61,62

The discussions of ARAC presume too much from the reader, and do not do justice to the concept. Because ARAC is a management tool which has a high degree of impact on the present way of doing things, its technical content and alternative uses need further explanation, perhaps in an appendix. Further, ARAC is based on one national laboratory approach and other component models and subfeatures deserve explanation.

The costs for implementing ARAC vary widely and those stated in the document are at variance with budget estimates for trial installations at two reactor sites; valid differences should be explained.

I believe the term "optimal" is a bit early. It may be that several mixes of systems of fixed monitors and computer assisted management systems may be appropriate for different areas of the country. In the last analysis, the States or regional groupings of States may elect to make independent judgments on the scope of a system which meets minimum Federal guidelines.

The "ring" system of fixed monitors is not unique to Alabama and has been under consideration for many years. Its cost effectiveness is a function of rapidly changing technology and any judgments on deployment should be made on the basis of historical facts as well as future possibilities. Advances in solid state electronics since 1970 could well reduce the costs of general deployment, especially if done on a large scale.

Some Long Range Considerations

There are some long term concepts that deserve consideration.

The use of ARAC type systems for management of other emergency events should not be precluded by its origination in nuclear affairs. This might include chemical spills on land, water or in the air, and tanker spills in bays and estuaries. Therefore in thinking about such systems there may be merit in locating the master centers away from reactors, in State or regional response centers where they would have general applicability. This would reduce the investment per event, and help build confidence in the use of computer assisted management systems. For example one commercial company offers on-line computer management of building air conditioning based on a regional weather model.

Stephen N. Salomon

- 3 -

In the seismic area, integrated systems offer a number of advantages when combined with nuclear station instruments. The real time analysis of earthquakes at regional response centers might well assist in decisions to ride-out or shut-down individual units based on a combination of electrical load flow and earthquake energy spectra. The location of nuclear power stations offers a dispersed sensor grid of exceptional national coverage.

All of the above imply a new and higher level of real time data acquisition among licensees of all sorts and regulatory agencies. The real-time data logging of critical facilities in order to provide signals for response planning is a logical transition from the present, highly automated internal systems of major energy conversion and utilization facilities. The next phase of industrial development may well see this extension of regulatory overview in order to better provide for public health and safety. It is not unreasonable for public officials to be as cognizant of ongoing events involving health and safety as are the myriad of individuals having access to bank accounts and airline reservations.



Robert T. Jaske
Technical Advisor to
the Director
Office of State Programs

cc: R. G. Ryan
H. E. Collins

NRC
Martin (Office of Nuclear Reactor Regulation)



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUN 21 1979

MEMORANDUM FOR: Harold E. Collins, Assistant Director
Office of State Programs

FROM: James A. Martin, Jr.
Accident Analysis Branch, DSE
Office of Nuclear Reactor Regulation

SUBJECT: COMMENTS ON DRAFT REPORT NUREG-0553 - "BEYOND DEFENSE-
IN-DEPTH"

The following is in response to your recent request of the Task Force:

GENERAL

1. Even considering the tendency of bureaucracies to inflate costs, the costs of planning compiled by Salomon, based on State and local estimates, are low, amounting to about \$52,500 per year per plant (ca 1978 dollars). This is about what Aubrey Godwin has been saying for years now. Since this includes costs of implementation of NUREG-0396, the NRC/EPA Task Force's judgment that its suggestions should not result in major additional expenditures appears to be correct.
2. Salomon makes no attempt to rank the various elements of planning as to their worth in (i) protecting the public if ever need be and (ii) everything else (e.g. keeping bureaucrats informed, environmental monitoring for post-accident analysis). Such a ranking needs to be done for us to see various aspects in their proper perspective.
3. Even Salomon slips occasionally and confuses costs of planning and costs of response. For example, he states on p. II-77 that the costs of blocking of roads "seems to be proportional to the perimeter" This may be true if one were to actually block roads, but the costs of deciding to do so some day, if necessary, are not at all proportional to perimeters. By and large Salomon does maintain the distinction, however.

SPECIFICS

1. On page II-64 Salomon hits on the key to a successful emergency response by the public - means for the early warning of people - and shows how little it costs - both capital costs and operating costs. I don't agree that sirens are no good. People in cities don't pay much attention to sirens that stay on for only a minute or so. But

H. E. Collins

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JUN 21 1979

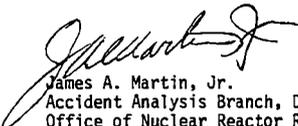
- people in the boonies do pay attention to sirens. I can put 70 to 120 db of dissonance all over a radius of 5 miles for \$50 K to \$100 K (capital costs, 1978 dollars). Once I can warn people in a hurry, I'm home free for all but the most major and abrupt releases - from the standpoint of helping people protect themselves. Once I've done that, I'm not at all sure what else is necessary for me to provide to protect people, or the relative worth of anything else.
2. Salomon notes the fetish in some State and local agencies for the "ring of detectors" concept (nb p. II-61). He does treat it fairly, tho', by pointing out various pros and cons. However, in the latter discussion he missed the key point in this regard, which is that the key variables for protective action decisions in the early time frame should be the plant instrumentation - and the non-radiological parameters predominantly. As we saw at TMI, evacuation and shelter decisions were planned to be based on in-plant observables. Radiological monitoring off-site was counter-indicative of protective actions at all times. Those who want a ring of detectors seem to be the ones who want to plan to await an actual major release before they would initiate protective actions - this is 180 degrees opposed to Uniform Federal Guidance and we should not support it. On the other hand, if they want it, we should't object very strenuously, and merely point out that licensees can very easily see a big release coming and couldn't miss a big one. Statements such as: "The core is (or is not) uncovered", "The containment is (or is not) intact", "ECCS worked (or did not)", carry far more import than "the dose rate on hill 23 at 3:10 p.m. was 1R/hr". We must also note that a dose rate measurement at any place and time bears only a tenuous relationship to the dose rate at another place and time, or to dose commitment.
 3. Nevertheless, we should point out that rings of detectors already exist. DCPA has 300,000 boxes of instruments across the U.S. and supports a calibration and repair facility in each state. DCPA has said that they would negotiate with states regarding the placement of a dozen or so instrument sets in the vicinity of nuclear power plants and establish an annual maintenance schedule for them. So, locales can have a ring of detectors for practically nothing! It would simply mean a reallocation of presently existing resources. (But I'd bet that States wouldn't buy this, especially where the Dept. of RAD. Health is in charge. They want their own; they don't trust CD; and they'd say that the Sheriff or Fire Dept. can't read a meter properly.) Or they could use my "cheapie-peeper" idea (as Ed Williams calls it) - put a telephone next to an on-site GM counter that goes click; you've now got a signal that you can transmit anywhere - and it costs only \$15 per month, or so.
 4. I don't understand why the protective response of shelter (staying home, shutting windows and doors, go in a closet, cover your nose and mouth, listen to the radio or TV for further instructions) is given such short shrift. It would be the easiest protective action for people to take and would be much better than taking a KI tablet (KI tablets have their uses, especially where institutional controls are in place, but they protect the thyroid only and they must be

H. E. Collins

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JUN 21 1979

taken within two hours after inhalation - a difficult accomplishment for the general public in an emergency).



James A. Martin, Jr.
Accident Analysis Branch, DSE
Office of Nuclear Reactor Regulation

cc: R. W. Houston
L. Soffer
S. Salomon
B. Grimes
R. Blond

**Public Interest
and Other**

**Natural Resources
Defense Council, Inc.**

Natural Resources Defense Council, Inc.

917 15TH STREET, N.W.
WASHINGTON, D.C. 20005
202 737-5000

Western Office
2345 YALE STREET
PALO ALTO, CALIF. 94306
415 327-1080

New York Office
122 EAST 42ND STREET
NEW YORK, N.Y. 10017
212 949-0049

June 12, 1979

Steven N. Salomon
State Program Officer
Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Dr. Salomon:

This letter is in response to the receipt of NUREG-0553 (Draft), dated March 30, 1979. I have not had an opportunity to read the entire report in depth, but one factor which immediately struck me was the question of the funding of the proposed upgrading of emergency preparedness which you recommend. It seems to me that, rather than the limited assessment of these additional costs on the utilities operating the plant, the entire assessment of the additional costs should be imposed on the utilities operating the plants. Unless this is done, there will be a failure to properly internalize an external cost associated with the operation of a nuclear facility.

If I understand the thrust of your report, it is that an important ingredient for the Nuclear Regulation Commission to be able to conclude that the operation of a nuclear plant provides a reasonable assurance of adequate protection of the public health and safety is the existence of adequate emergency preparedness. Certainly that conclusion is one with which we are in complete agreement. If that is so, then the cost for the NRC to be able to make that finding is the cost of providing such emergency preparedness. Pursuant to Title 31, U.S.C., § 483a, the NRC is required to recoup the cost of processing and approving applications for licenses for nuclear plants. It would therefore appear that, so long as the NRC is itself funding the upgraded emergency preparedness as a part of being able to make a reasonable assurance finding, it would be permissible, if such a finding is made, to impose the full cost of such emergency preparedness on the utility.

Even if there is some question about existing authority to impose the costs on the utility, I would think it would be desirable for the NRC to affirmatively recommend that all such costs be imposed upon the utility. It should not

Steven N. Salomon, Ph.D.
June 12, 1979
Page Two

be the case that the financial difficulties of a local community would inhibit the implementation of the necessary emergency preparedness plan or the continued viability of such a plan once implemented.

There is a related question which you address directly in your paper, and that is the question of whether plants which now do not have adequate emergency preparedness plans should be allowed to continue to operate (p. I-2). As you may know, this has been the subject of comments filed by the Natural Resources Defense Council and Citizens for a Better Environment upon which essentially no action has been taken by the Staff. (In the Matter of Appendix E -- Emergency Plans For Production and Utilization Facilities: Natural Resources Defense Council and Citizens for a Better Environment Comments on Proposed Amendment to Appendix E to 10 CFR Part 50.) For your convenience, I am enclosing a copy of those comments and requesting that you attempt to encourage the powers that be within the Staff to provide an answer to the comments, particularly an answer in line with the findings of your report -- i.e., that without adequate emergency preparedness a nuclear plant should not be allowed to operate.

Sincerely,

enclosure


Anthony J. Roisman

FRIENDS OF THE EARTH

124 SPEAR SAN FRANCISCO CALIFORNIA 94103

415. 495-4770

May 15, 1979

Mr. Stephen N. Salomon
State Programs Officer
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

re: NUREG 0553, Funding of State and Local Government
Radiological Emergency Response Plans

Dear Mr. Saloman:

I have reviewed your draft report referenced above. It represents, in my view, a thorough examination of a problem presented to local governments by the construction of a nuclear power plant nearby: they must fund a program of preparation for nuclear disaster.

As you are undoubtedly aware, all unrecovered costs paid by government funds (federal, state, or local) for regulation of nuclear power reactors are subsidies to the nuclear industry, i.e., taxpayers pay for controlling a public menace placed in their community by power companies and reactor builders.

I would suggest, therefore, that a guiding principle behind the initiation of widespread emergency planning near nuclear power reactors (an immediate NRC priority) must be that all costs of the program, federal, state, or local, be paid, directly or indirectly, by the reactor owners.

Please send me a final draft of your report.

Sincerely,

W. Andrew Baldwin
W. Andrew Baldwin
Legal Director

WAB:ah



Human Affairs Research Centers
4000 N. E. 41st Street
P.O. Box C-5395
Seattle, Washington 98105
Telephone: (206) 525-3130
CABLE: MARCSEA

June 8, 1979

Dr. Stephen Salomon
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Steve:

Thank you so much for responding so promptly to my request for information and a copy of your draft report. I'm sorry this reply has not been as prompt in return.

We have found your draft report most useful, particularly in its assessment of existing planning procedures and issues of cost and responsibility. We are currently cataloging state emergency response plans for selected states, trying to identify the plan element, if any, that addresses transportation accidents involving radioactive materials. We are finding much of the lack of organization and coordination you describe in NUREG-0553. Significant uncertainty seems to exist as to various agency responsibilities in an accident, and there is a genuine interest in improving the situation given the events at Three Mile Island. Thus, although we are not specifically looking at fixed facilities, we found the discussion in your report most timely.

Again, thank you for the draft and the other NUREG documents. We look forward to the final report of NUREG-0553. Our current work is in support of Sandia's work for the NRC on the transport of radionuclides through urban areas; I'm sure you'll be seeing working copies in your office. However, if any of our more specific information would be of use to you, please feel free to call.

Sincerely,

Marjorie R. Greene
Marjorie R. Greene
Social Change Study Center

MRG/mb

**Safe Energy
Alliance**

June 8, 1979

Mr. Stephen N. Salomon
State Programs Officer
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Salomon,

It has just today come to my attention your solicitation of comments relative to NUREG-0553 (draft copy) BEYOND DEFENSE-IN-DEPTH: COST AND FUNDING OF STATE AND LOCAL GOVERNMENT RADIOLOGICAL EMERGENCY RESPONSE PLANS AND PREPAREDNESS IN SUPPORT OF COMMERCIAL NUCLEAR POWER STATIONS - MARCH 30, 1979

I am a member of a local citizens group in southwestern New Hampshire called Cheshire County Safe Energy Alliance. Our territory is located directly across the Connecticut River, and generally downwind from, the Vermont Yankee Nuclear Power Plant. Frankly we are quite concerned, especially given the operating record of that particular nuclear plant over the last six years.

Will you please forward to us a copy of NUREG-0553 and any relevant update material. Also, will you please forward a copy of same to:

City of Keene
Keene City Hall
Keene, N.H. 03431

Attn: Mayor Richard Peloquin,
and Keene City Council

The City Council and Mayor have, at least since the Three Mile Island accident, become increasingly aware of not only known and potential dangers associated with nuclear power plants (indeed the entire fuel cycle), but the responsibilities of elected and public health officials to learn about and prepare for possible radiological emergencies, including educating and involving the public in their respective territories.

Thank you in advance for your assistance.

Jay Adams

Jay Adams
Safe Energy Alliance
388 Court St.
Keene, New Hampshire 03431

cc. Keene City Council
Mayor Richard Peloquin

Al Lunichiello - SEM

Governor Hugh Gallen

**New Jersey Public Interest
Research Group**



July 27, 1979

Dear Dr. Salomon;

I hope you will be able to answer some of the questions NJPIRG has concerning your report, 'Beyond Defense in Depth'.

Page I-1 \$15 million for the 24 higher risk sites- what are they?

Page II-1 If N.J. has better plans, how bad are the other states?

We have been involved in nuclear power research for some time and it seems that there is not enough preparation. The state's PIPAG manual includes E.R. Squibb in New Brunswick, yet the CD Director in the County knows nothing about evacuation plans. Though not on the same scale, Squibb does have a stockpile of radioactive iodine and yet very little is known about it, by us and the DEP.

Page II-3 Does N.J. have a full time Radiological Defense Officer?

Page II-34 Why is there no training being carried out for Oyster Creek?

Page II-35 Was simulation exercise in Oswego County ever carried out in April 1979. What were the results?

Page II-63 Is anything being done to change the lack of communications equipment at the ten outstanding examples, like Oyster Creek?

Page II-73 Is anything being done for regional planning? The 'entire Atlantic Seaboard' includes home. If there is anything being done or discussed, NJPIRG would like to be involved or at least informed.

NJPIRG would greatly appreciate these questions being answered and also receiving a copy of the final report. Please direct both to Ed Lloyd, Director of NJPIRG, at the Trenton address. Thank you so much for your time and consideration. Just one more thing, maybe your report should be reconsidered in light of the accident at TMI, or we may all end up glowing in the dark.

New Jersey Public Interest Research Group • 32 W. Lafayette St., Trenton, N.J. 08608 • (609) 393-7474

This paper is 100% reclaimed.

2.

Thank you again.

Sincerely,

Lisa K. Fetterman

Lisa K. Fetterman

Research Supervisor

NJPING

Frances Weinberg

Frances Weinberg
122 Rosa Street
Metuchen, N. J. 08840

July 29, 1979

Dr. Stephen N. Salomon
State Programs Officer
Office of State Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Dr. Salomon:

I have seen a reference to, and would like to request a copy of the report: Beyond Defense-In-Depth- NUREG-0553, March 30, 1979.

I understand that a portion of the report deals with the advisability of using potassium iodide as a thyroid-blocking agent.

I am a consumer writer specializing in nutrition topics and know that many people are wondering about what substances they might use to block radioactive damage in the event of an accident.

Do you recommend the use of potassium iodide to the general public? What about calcium, kelp, pectin, these I have found, in studying this subject, are recommended by various people as being able to counter radioactive substances.

I wonder if I can obtain more information about the two health radiation personnel (from Florida and Oregon) mentioned in the report (p. II-75) who believe that there is no need for potassium iodide precautions.

I would greatly appreciate any information - or further references - that you can send me concerning dietary methods of blocking radiation.

Sincerely,

Frances Weinberg

Frances Weinberg

BIBLIOGRAPHY

Many of the listed documents can be obtained for a fee from:

- National Technical Information Service (NTIS), Springfield, VA 22161;
- Government Printing Office (GPO), Washington, DC 20402; and
- NRC Public Document Room (PDR), 1717 H Street, N.W., Washington, DC 20555.

Technical and legal articles can be obtained for the most part in technical and law libraries. Access to other documents is noted.

PLANS AND PREPAREDNESS

U.S. Nuclear Regulatory Commission

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States

California

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existing emergency response plans in accordance with revised planning criteria. A Nuclear Planning Assessment Special Account would be set up. The operator of each nuclear power station would be assessed.

Senate Bill 1184, Introduced April 18, 1979. This bill is intended to provide a ringtype monitoring system around each facility.

Senate Bill 1185, Introduced April 18, 1979 and amended June 5, July 17, and August 24, 1979. This bill would require the development of an alert classification system and an alarm system which would readout in the Office of Emergency Services Warning Center. Operators would notify State and local authorities according to the alert system. Costs could be borne by the utilities.

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Florida

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Illinois

Senate Bill 1084. "Illinois Nuclear Safety Preparedness Act." Signed by the Governor September 14, 1979. (See Exhibit 20.)

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Kentucky

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New Jersey

Assembly No. 1272, Introduced April 24, 1978. At present, any municipality wherein a nuclear power plant is located receives a share of the franchise and gross receipts taxes imposed on that facility by the State. With that share, such municipality is able to mitigate the various impacts of such a facility, including the safety aspects. This bill would permit such a municipality to grant a portion of such shares up to \$250,000 annually, to the affected counties and municipalities for the purpose of preparing, testing, and implementing nuclear emergency response plans. (See Exhibit 22.)

Assembly No. 3496, Introduced July 9, 1979. The purpose of this bill is to require the adoption by the State of New Jersey of Statewide emergency evacuation plans, subject to the approval of the Nuclear Regulatory Commission, before any new nuclear electricity generating facility may commence operation in this State.

Assembly No. 3508, Introduced July 9, 1979. The purpose of this act is to establish comprehensive plans and procedures for implementing protective action to abate any radiological threat to the health and welfare of the people of the State of New Jersey in the event of a radiation accident during the transportation of radioactive material or at a nuclear facility. The Act provides for the assessment of certain electric utilities, providing penalties for violations, supplementing "The Radiation Protection Act," approved July 8, 1958, and making an appropriation.

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11. ABSTRACT The current hodgepodge funding approach to State and local government radiological emergency response plans and preparedness in support of commercial nuclear power stations is inadequate, sporadic, uncertain and frustrating. The creation of a "Radiological Emergency Response Plans and Preparedness Fund for State and Local Government" is offered as a preferred solution. Monies for the Fund could be derived from a one time Fee of \$1 million levied on the operator of each nuclear power station. The Fund should be administered by the NRC. For 40 States and 101 sites, the estimated national present value cost is \$100 million to State and local governments for the period 1980 to 2000, assuming a discount rate of 10 percent and no inflation. Major component costs are for: <ul style="list-style-type: none"> . NRC concurrence in plans and preparedness of all impacted State and local governments; . Implementation of the 10- and 50-mile Emergency Planning Zones for all sites; . Enhanced plans and preparedness involving Atmospheric Release Advisory Capability, and ring monitoring or some other offsite monitoring system; and . Funding technical directors of local government. Some related Federal costs include: <ul style="list-style-type: none"> . Federal consultants to State and local governments; and . Training, research, regional plans, and public information. The report also discusses actions by Federal and State agencies and points to long range considerations where preparedness could be enhanced by a coherent funding mechanism.					
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