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2-12-2009

FROM: W. D. KIMZEY
112 MILL CREEK LANE
WEATHERFORD, TEXAS 76087

TO: CHIEF, RULES AND DIRECTIVES BRANCH
DIVISION OF ADMINISTRATION SERVICES
OFFICE OF ADMINISTRATION
MAILSTOP TWB-05-B01M
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

RE: EXPANSION OF COMANCHE PEAK IN GLEN ROSE, TEXAS

ENCLOSURES & REFERENCES: PAGE 5

Dear Sir,

Please let me express my concerns about expanding the nuclear plant and why it is a bad project.

It is not need. In the adjacent counties there has been a huge

field of natural gas discovered. This field, the Barnett Shale, has produced so much gas so fast that it has "over-supplied natural gas markets". (SEE ENCLOSURE (1)) With Marathon Oil and Anadarko Petroleum cutting cutting expenses by up to 24 percent and XTO Energy "trimming $600 million" why would Luminant say they want to spend $22 billion on expansion? Plus natural gas burns clean and does not leave radioactive waste.

The current administration in Washington is committed to renewable-energy projects (enclosure (2)) to the tune of $8 to $9 billion dollars. Texas is already gearing up for expanding the generation of solar power. State Senator Troy Fraser already has two bills supporting solar incentives (enclosure (3)). With the vast expanses of unpopulated areas and 100°+ sunshine solar energy is a great match for Texas. There are also 18 bills filed

in our legislature (enclosure (4)).

Texas currently produces "more wind power than any other state, and second place is not even close" (enclosure (5)). Anyone from Texas can tell you about the wind here. The only hold up is the power grid, and that is being addressed by various groups (enclosure (6)). The word has reached President Obama (enclosure (7)). So wind power is going to be developed, the cost will be a fraction of nuclear power and it produces no radioactive waste.

So I have to ask why in a faltering economy and less demand for energy, in an arid region already facing constant water shortages, but that has an oversupply of natural gas and a huge future in solar and windpower? Add to that the help from the government for clean renewable energy. The answer is greed and money. Under governors Bush and then Perry Texas de-regulated the electricity industry.

In short order Texans went from paying below the national average to prices increasing at greater percentages than any other state (enclosure (8)). There is pressure from all sides to re-regulate the industry. But the sharks already smell blood in the water.

So here comes Luminant into the area where the have a near monopoly. They are a multibillion dollar corporation whose ONLY aim is to generate profits for their stockholders and bonuses for the CEO. They have figured out how overcapitalization in a monopoly market results in maximizing profits. So have others (enclosure (9)).

Let me finish by saying this nuclear expansion is the wrong answer to a problem that does not exist and by the time there is a power shortage solar and wind will be a much better answer.

Thank you,
W. D. Lingsey

ENCLOSURES & REFERENCES

(1) FT. WORTH STAR TELEGRAM 2-04-09
XTO CUTS CAPITAL BUDGET
(2) FT. WORTH STAR TELEGRAM 2-11-09
ECONOMIC STIMULUS PLAN
(3) FT. WORTH STAR TELEGRAM 2-02-09
TEXAS LEGISLATURE - SOLAR
(4) FT. WORTH STAR TELEGRAM 2-03-09
RENEWABLE ENERGY
(5) FT. WORTH STAR TELEGRAM 2-09-09
STIMULUS - TX WIND POWER
(6) FT. WORTH STAR TELEGRAM 1-09-09
U.S. POWER CRISIS - WIND
(7) FT. WORTH STAR TELEGRAM 2-10-09
OBAMA - WIND & SOLAR
(8) FT. WORTH STAR TELEGRAM 2-10-09
DEREGULATION - POWER COSTS
(9) FED. RESERVE BK. ST. LOUIS REVIEW JAN, FEB 09

FWST
2-4-09
PG 2C

ENERGY

XTO cuts capital budget for '09 by $600 million

The firm also sells hedges to pay debt.

By JIM FUQUAY
jfuquay@star-telegram.com

XTO Energy said Tuesday that it is trimming its 2009 capital-spending plans by $600 million because of depressed natural gas prices, which are at their lowest levels in more than two years.

The Fort Worth-based independent producer also said that, for the second time in less than a month, it has raised cash to pay down debt by settling some of its hedges on 2009 production. Those hedges, which represent agreements to sell crude oil and natural gas at some fixed price in the future, were negotiated last year when prices were much higher and therefore have gained in value as prices have plunged.

Last week, XTO Chairman Bob Simpson said the company's hedges were worth more than $5 billion at the start of the year. XTO said it sold about a third of its hedges Tuesday, raising $800 million after taxes.

Simpson said Tuesday that the company expects the move will trim its debt to between $10 billion and $10.5 billion.

On Jan. 14, XTO announced that it settled about a third of its hedges for $900 million after taxes. In both cases, it put new hedges in place that are tied to current prices, protecting the company against further declines.

Regarding its reduced capital budget, XTO said it expects to spend $2.75 billion on exploration and development in 2009, and $450 million on pipelines and other natural gas infrastructure. That's down 16 percent from the company's previously announced 2009 budget, which called for $3.3 billion for exploration and development and $500 million for pipelines.

The company anticipates running an average of 65 drilling rigs during the year. That compares with 93 rigs the company operated during last year's third quarter, according to past presentations.

In the same release, Simpson said that "increasing production too rapidly into the currently over-supplied natural gas markets is not a prudent use of our shareholders' resources." Hutton said the company expects to realize free cash flow of more than $2 billion in 2009 at the projected production level.

XTO said it expects to spend about $725 million in the Barnett Shale, where it is one of the biggest producers. That's down from $800 million in the original 2009 budget.

Two other energy companies, Marathon Oil and Anadarko Petroleum, also said Tuesday that they are scaling back their spending plans. Marathon, the country's fifth-largest integrated oil company, said it cut its capital budget 24 percent, while Anadarko simply said that it will spend less than it did in 2008.

Energy companies' efforts to throttle back spending after going all-out in previous years is generally drawing approval from investors.

XTO's shares (ticker: XTO) rose 43 cents, or 1.2 percent, to close at $36.46 Tuesday in below-average trading.

JIM FUQUAY, 817-390-7552 ENCLOSURE (1)

Economic stimulus plans compared

Highlights of the spending and tax cuts in the economic stimulus plans. One totaling $819 billion was passed by the House. The Senate is expected to vote on a compromise amendment that cuts its bill to $827 billion.

▲ Higher amount

Program category	Amount (In billions)	HOUSE	Amount (In billions)	SENATE
Education	$79.0 ▲	Stabilization Fund for state education programs	$39.0	Stabilization Fund for state education programs
	$13.0 ▲	Low-income elementary, secondary schools	$12.4	Low-income elementary, secondary schools
	$20.0 ▲	School, university construction projects	$0	No school, university construction projects
	$15.6 ▲	Increase maximum Pell grants	$13.9	Increase maximum Pell grants
	$13.6 ▲	Help states educate children with disabilities	$13.0	Help states educate children with disabilities
	$141.2 ▲	SUBTOTAL	$78.3	SUBTOTAL
Unemployment insurance, job training	$27.0	Extend, expand federal unemployment insurance through Dec. 31	$27.0	Extend, expand federal unemployment insurance through Dec. 31
	$4.0 ▲	State grants for job training	$3.4	State grants for job training
	$31.0 ▲	SUBTOTAL	$30.4	SUBTOTAL
Health care	$13.0 ▲	Allow states to expand Medicaid to cover people who lose jobs through 2010	$0	No expansion provision for unemployed
	$87.0	Reimbursement to state Medicaid programs; 4.9 percentage point increase for every state; 50 percent of total spending reserved for additional help to states based on unemployment rates	$87.0	Reimbursement to state Medicaid programs; 5.6 percentage point increase for every state; 20 percent of total spending reserved for additional help to states based on unemployment rates
	$20.0 ▲	Information technology incentives; penalties for providers not adopting health IT as of fiscal 2016; new privacy rules	$19.0	Information technology incentives; penalties for providers not adopting health IT as of fiscal 2015; new privacy rules
	$27.0 ▲	Expand COBRA, an extension of employer-provided health insurance for people who lose their jobs; 65% premium subsidy for 12 months; people over age 55 or with 10 years tenure at jobs get unsubsidized coverage through age 65	$20.0	Expand COBRA, an extension of employer-provided health insurance for people who lose their jobs; 50% premium subsidy for 12 months
	$147.0 ▲	SUBTOTAL	$126.0	SUBTOTAL
Defense, homeland security, veterans	$5.7 ▲	Military construction	$2.4	Military construction
	$2.7	Renovation	$3.2 ▲	Renovation
	$2.9	Homeland security	$5.1 ▲	Homeland security
	$1.0	VA construction, mainly medical facilities	$1.4 ▲	VA construction, mainly medical facilities
	$12.3 ▲	SUBTOTAL	$12.1	SUBTOTAL
Transportation, infrastructure	$30.0 ▲	Highway programs; states have 90 days to start	$27.1	Highway programs; states have 180 days to start
	$12.0 ▲	Transit; states have 90 days to start	$8.4	Transit; states have 180 days to start
	$4.5	Army Corps of Engineers projects	$4.6 ▲	Army Corps of Engineers projects
	$46.5 ▲	SUBTOTAL	$40.1	SUBTOTAL
Energy, environment	$18.5 ▲	R&D on renewable energy, energy efficiency	$14.4	R&D on renewable energy, energy efficiency
	$4.5	Modernize electric grid	$4.5	Modernize electric grid
BILLIONS	$2.4	Pilot clean coal projects	$4.6 ▲	Pilot clean coal projects
	$8.0	Loan guarantees for renewable-energy projects	$9.0 ▲	Loan guarantees for renewable-energy projects
No FUNDING FOR NUCLEAR	$6.0 ▲	Wastewater infrastructure revolving loan fund	$4.0	Wastewater infrastructure revolving loan fund
	$2.0	Drinking water fund	$2.0	Drinking water fund
	$2.1 ▲	National Park infrastructure	$0.8	National Park infrastructure
	$43.5 ▲	SUBTOTAL	$39.3	SUBTOTAL
Housing	$5.0	Public housing	$5.0	Public housing
	$4.2 ▲	States to buy, rehab foreclosed housing	$2.25	States to buy, rehab foreclosed housing
	$1.5	HOME program; expand affordable housing	$2.25 ▲	HOME program; expand affordable housing
	$10.7 ▲	SUBTOTAL	$9.5	SUBTOTAL
Law enforcement	$3.0 ▲	Help state, local crime fighting	$1.5	Help state, local crime fighting
	$1.0	Hire police officers for community policing	$1.0	Hire police officers for community policing
	$4.0 ▲	SUBTOTAL	$2.5	SUBTOTAL

Tax cuts

Major categories over five years, in billions (Senate as of Thursday):

	Amount	HOUSE
Individuals, families		Tax credit for singles and couples; expanded tax credit and earned tax credit for families with children; education tax credits housing incentives
	$184.0	SUBTOTAL
Business		Allowance for certain property acquired in 2009; 5-year carryback of net operating losses; extend bonus depreciation for investments in new plants and equipment
	$47.0	SUBTOTAL
State, local governments		Qualified school construction bonds; taxable bond option for government bonds
	$17.0 ▲	SUBTOTAL
Energy incentives		Investment tax credit for businesses that use renewable energy or build facility; extend tax credit for purchase of energy-efficient furnaces, insulation, etc.
BILLION	$8.0	SUBTOTAL

	Amount	SENATE
Individuals, families		Tax credit for singles and couples; expanded tax credit and earned tax credit for families with children; education tax credits housing incentives; increase AMT exemption
	$246.0 ▲	SUBTOTAL
Business		Allowance for certain property acquired in 2009; five-year carryback of net operating losses; deferral of certain income from discharge of indebtedness
	$72.0 ▲	SUBTOTAL
State, local governments		Specific category not listed
Energy incentives		Extension of renewable electricity tax credit; extend tax credit for purchase of energy-efficient furnaces, insulation, etc.; five-year carryback of business credits
BILLION	$18.0 ▲	SUBTOTAL

Sources: *CQToday*, U.S. House and Senate, Joint Committee on Taxation.

MCT

(ENCLOSURE 2)

Monday
February 2, 2009
'Where The West Begins'
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PAGE 1A

TEXAS LEGISLATURE

Solar power could get a turn to shine

In Texas, renewable energy has generally meant wind power. But that may be about to change.

Legislators have filed a series of bills in the hope of rapidly expanding Texas' solar footprint.

And both lawmakers and environmental groups hope that some type of legislation will get passed.

Some proposals call for creating incentives or rebates to help offset the cost of installations; others would make it harder for neighborhood associations to block the installation of solar panels.

Today, news conferences will held across the state to tout solar power's benefits.

Staff writer Bill H...

ELECTRICITY

Legislature may give renewable energy a boost

Incentives and rebates could help make solar panels more affordable.

By BILL HANNA
billhanna@star-telegram.com

For the last decade, when most people have thought of renewable energy in Texas, they have usually thought of wind.

But this year, solar and other forms of renewable energy are starting to get a place at the table at the Legislature.

Legislation including incentives and rebates could pave the way for individuals and businesses to afford solar panels and spur a boom similar to the one that started with wind a decade ago.

Jim Duncan, owner of North Texas Renewable Energy in Fort Worth, said boosting incentives could jump-start his industry.

"If these incentives get passes, business is really going to take off," said Duncan, who has been installing solar panels for six years.

State Sen. Troy Fraser, R-Horseshoe Bay, believes that some type of solar legislation will be passed this session. Fraser, chairman of the Senate Business and Commerce Committee, helped craft wind legislation a de-

More on ENERGY on 2C

Energy: News conferences will focus on solar power

CONTINUED FROM 1C

cade ago.

"Before that legislation, it wasn't cost-effective in Texas," he said. "Now, we're the largest producer of wind energy in the United States — that's exactly what we're trying to do with solar."

Ron Hein of Fort Worth spent $26,000 to install 3 kilowatts of solar panels on his home, near the Cultural District, in 2007 and '08. Hein said that the system has reduced his electricity costs by about 45 percent but that recouping the cost of the panels will take about 15 years. He said he could have saved a lot of money by installing the whole system at once.

The Tarrant Regional Water District is building a 1,360-panel, 236-megawatt, roof-mounted solar array. TARRANT REGIONAL WATER DISTRICT

Hein said incentives from the state and utilities could persuade more homeowners and businesses to follow his lead. "It's like an asset that's paying for itself," he said.

Fraser said he will hold hearings to build a consensus on solar legislation that should incorporate the best of all the current bills. Fraser's SB 545 and SB 546 call for establishing programs for, respectively, solar generation incentives and energy efficiency.

But myriad issues must be considered, from determining what incentives would work best to ensuring that individual solar panel users will get credit for any electricity they generate.

"There is nothing that is not on the table," Fraser said. "We are going to be training Texas in using energy more efficiently."

With the new presidential administration calling for 1 million plug-in cars on the road, Fraser would like to see incentives for parking garages with solar arrays where drivers could plug in their electric cars while they're at work.

Fraser also believes that wind farms, which often generate electricity at night, when demand is low, could help generate power for plug-in cars at night.

Other sources of energy may include geothermal and, in Fraser's case, nuclear.

He supports Luminant's proposal to double, to four, the number of reactors at Comanche Peak in Glen Rose. The proposal has drawn the ire of environmentalists and some residents.

But Fraser believes that solar power could prove ideal for businesses and municipalities.

"I really think a lot of the push will come from municipal buildings, state buildings and local governments," he said. "We've also heard from businesses like Wal-Mart and HEB that have expressed interest."

The Tarrant Regional Water District is already building what is being billed as the largest roof-mounted solar array in Texas: a 1,360-panel, 236-megawatt system that will cost $1.47 million and is expected to pay for itself in 20 years, Water District spokesman Chad Lorance said.

Last week, Austin Energy, the state capital's electric utility, announced that it wants to build one of the largest solar projects of its kind in the world. It could open by 2010, power as many as 5,000 homes and allow Austin Energy to stay on track to generate 30 percent of its power from renewable sources by 2020.

"This is the year for solar in the Texas Legislature," said Tom "Smitty" Smith of Public Citizen. "We are in a race to become the manufacturing capital for solar energy in the United States. Right now, we are losing it to other states that have incentive programs."

Today, legislators and environmentalists will hold statewide news conferences to draw attention to solar energy.

"Wind has been a tremendous boon, but a lot of the wind in West Texas and on the coast blows at a certain time of day — it doesn't provide base power," said Cyrus Reed, conservation director of the Lone Star chapter of the Sierra Club. "Solar does give you a different time of day to generate electricity than wind. We also need to explore other ideas like geothermal. The idea is, we need other sources of energy." ENCLOSURE (3)

BILL HANNA, 817-390-7698

RENEWABLE ENERGY

FWST 2-3-09 1C

'Texas . . . needs to take the lead'

News conferences statewide promote solar legislation.

By BILL HANNA
billhanna@star-telegram.com

FORT WORTH — For Entech Solar, the level of interest soared in the summer when the price of crude reached $140 a barrel.

Suddenly, the calls came in as companies and government entities searched for new sources of energy. But the surge wasn't just about being green.

"They want to know what their costs are going to be," said Robert Walters, vice president of marketing for Entech Solar,

More on ENERGY on 5C

Energy: Legislation may benefit area solar firm

CONTINUED FROM 1C

which designs solar systems and is based in the Alliance Global Logistics Hub in far north Fort Worth.

Even as gas prices have dropped, the interest in renewable energy has remained high.

At a news conference Monday at Entech's headquarters, Tom "Smitty" Smith of Public Citizen said Texas is competing with 30 other states to become the manufacturing capital of the United States and needs incentives to keep pace with states like New Jersey.

"With the economic-stimulus package pending and federal global-warming legislation down the pipe, Texas now more than ever needs to take the lead on renewable-energy projects," Smith said.

Legislative and environmental leaders held news conferences statewide Monday to promote solar legislation. A bipartisan group of legislators announced several initiatives designed to expand solar energy in Texas and said Texas has more untapped solar power than any other state.

Smith said legislators have filed 18 solar-power bills that would, for example, create incentive programs from user fees to encourage businesses and individuals to install solar systems. Proponents say that about an extra $1 a month on utility bills could result in 500,000 solar roofs in Texas by 2020 and bring the state 22,000 jobs.

Other bills filed would prohibit neighborhood associations from banning solar panels on residences.

Looking to grow

Entech, formerly based in Keller, was acquired by Waterworld and Solar technologies a year ago. Waterworld then changed its name to Entech Solar and moved its corporate headquarters from New Jersey to Texas.

Walters said that if solar power expands as rapidly as legislators and environmentalists predict, companies like Entech will need incentives to keep growing in Texas.

Entech currently has 40 employees but expects to double that number. It is building a demonstration array of solar panels across the street from its headquarters and has also discussed building large-scale solar systems in West Texas. Walters said states like California are ahead of Texas in offering incentives.

What's ahead

Nearly 4,800 megawatts of solar projects have been announced in California and Arizona, according to Public Citizen.

Entech, which was founded in 1983, has customers that include the U.S. Department of Energy, National Renewable Energy Laboratory, NASA and the Jet Propulsion Laboratory.

ENCLOSURE (4)

BILL HANNA, 817-390-7698

ENCLOSURE (4)

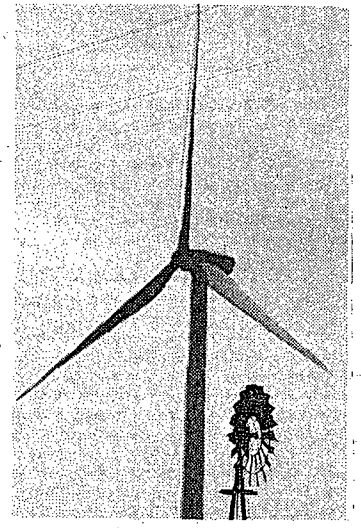
ECONOMY

FWST 2-9-09 PG 11-B

Texas poised to gain significant benefits from federal stimulus package

The federal stimulus could help relieve traffic congestion, push the envelope on clean-coal technology and move wind-generated electricity around the state.

By BRUCE CHURCH
Special to the Star-Telegram



THE ASSOCIATED PRESS/LM OTERO

As the new administration in Washington faces down this country's worst economic crisis since the Great Depression, one of its first significant acts will be figuring out how to deploy the proposed federal stimulus package — whatever shape it ultimately takes.

When he was still president-elect, Barack Obama's transition team asked IBM for thoughts on this. Our recommendation emphasized transformational investments in smarter infrastructure as the best way to create new jobs and stimulate growth.

Texas also stands to benefit from such an approach.

As the bill stands, Texas would get $2.3 billion for highways, $370 million for transit and $277 million for clean-water projects. A portion of federal funds is also slated specifically for our neck of the woods, going to North Texas public schools, highway projects and public transit.

These are extremely important areas, and Texas should do everything it can to use these funds wisely. But there are other transformational initiatives in the legislation that will help prepare Texas to compete in the 21st century, and we shouldn't be shy about pursuing them.

Consider the issue of our country's electric grids. They're in dire need of an upgrade, and this is a major focus of the stimulus bill. Making an electric grid "smart," with things like digital sensors and advanced analytics, has many advantages. For utilities, it makes it easier to detect outages and integrate cleaner, renewable energy sources.

Meanwhile, consumers can manage their energy consumption more effectively because they get a better sense of their usage and how it affects their costs. For Texans, that's a pretty important benefit. Homeowners in Dallas and Houston had the highest average utility bills in the country last year, according to one recent report.

Smart-grid funding is complemented nicely in the federal stimulus legislation by $8 billion in loan guarantees for renewable energy projects such as wind power.

One thing we've got a lot of in Texas is wind. In 2007, the U.S. wind industry grew by 45 percent, and over half of that growth came from Texas. We produce more wind power than any other state, and second place is not even close. Texas accounts for almost one-third of the nation's total installed wind capacity. That's the equivalent of the electricity needed to power more than 1 million Texas homes.

Imagine what that would mean for Fort Worth residents if Texas could get federal funding for wind transmission projects so that more of the wind power generated in West Texas, where most of the wind farms are located, could make its way to the Metroplex and other parts of the state.

Clean coal is another thing we heard a lot about during the 2008 campaign, and it's included in the bill, too, in the form of $2.4 billion set aside to develop technology to capture and store carbon dioxide emitted by coal power plants.

Texas could play a major role here as well. Many of our oil companies have developed methods to store carbon dioxide, which they use to inject into aging wells to produce more oil. For this reason, some geologists think Texas could become a national laboratory for carbon storage.

It's exciting to think about what investments in renewable energy and other smarter infrastructure projects could mean for Texas. And there are many other initiatives in the stimulus bill that will help prepare us to compete in the global economy, including improving healthcare technology systems and expanding broadband access to rural areas.

The list of things that need to be addressed is long. But if we play our cards right, Texas could be a leader on the nation's path to economic renewal.

ENCLOSURE (5)

BRUCE CHURCH IS IBM'S SENIOR EXECUTIVE FOR DALLAS.

How to stave off a looming power crisis across the U.S.

FT. WORTH STAR TELEGRAM 1-9-09 PG 13B

There is a growing shortage of electricity around the country, and it will take government action on the state and local levels to avert blackouts and brownouts.

By GLENN ENGLISH and JACKSON E. REASOR JR.
Special to The Washington Post

The lights might go out in Virginia in two years. As a *Washington Post* editorial last fall and other reports have noted, blackouts are likely in the commonwealth by 2011 because demand for electricity is outstripping supply and the state needs access to new sources of power.

Sadly, Virginia's predicament can be seen around the country. The United States faces an energy crisis: More power generation and more transmission lines are needed, and all this must be created quickly while also meeting climate change goals.

Over the past few months, officials from the National Rural Electric Cooperative Association have met with representatives from the 900 cooperative electric utilities that supply power to 40 million people in 47 states.

A common theme has emerged: Our political leaders must develop a national energy policy that funds development of new technologies to keep electricity affordable while meeting climate change goals. Otherwise, a growing number of Americans won't be able to pay for power, and many will be at risk of rolling blackouts and brownouts.

In the past five years, utility bills have risen 30 percent, largely because of the rising cost of fuel, mainly coal and natural gas. The country's leading consumer organizations, including the Consumer Federation of America and Consumers Union, recently wrote to President-elect Barack Obama, calling on him "to devote as much attention to the affordability of electricity as has been devoted to gasoline."

The U.S. Energy Information Administration forecasts that by 2030, demand for electricity will be 30 percent higher, the equivalent of adding four Californias to the power grid.

In some regions, demand will soon outstrip supply.

The North America Electric Reliability Corp., which oversees the reliability of the U.S. electric power grid, projects that the desert Southwest will be at risk for blackouts in 2010 because of a shortage of power generation capacity.

An Agriculture Department report this year on rural electric power generation found that "brownouts are probable unless investment in transmission is increased and simultaneously, energy efficiency efforts and demand side management must be intensified."

So what should Obama do to meet both our nation's growing demand for electricity and our climate change goals?

The next administration should study the energy blueprint promoted by executives at cooperative electric utilities from around the country:

- The government should expand initiatives that boost efficiency at the consumer level, such as the Energy Department's Weatherization Assistance Program, which helps consumers defray the cost of adding insulation, efficient windows, Energy Star appliances, and heating and cooling systems.
- Government policies should encourage the construction of new power lines so wind power produced in rural areas can be dispatched to cities where it is most needed.
- Government must pare the red tape associated with building nuclear power plants.
- For real long-term progress, our leaders must invest in research so a way can be found to capture and permanently store carbon emitted by coal-fired power plants. If we can pull off that feat, we could optimize our most plentiful fuel resource without increasing greenhouse gases.

Congress and Obama face a historic opportunity to tame our growing energy crisis. If they don't act, the lights will go out. ENCLOSURE (6)

GLENN ENGLISH, A FORMER DEMOCRATIC CONGRESSMAN FROM OKLAHOMA, IS CHIEF EXECUTIVE OF THE NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION. JACKSON E. REASOR JR. IS PRESIDENT AND CHIEF EXECUTIVE OF OLD DOMINION ELECTRIC COOPERATIVE AND THE VIRGINIA, MARYLAND & DELAWARE ASSOCIATION OF ELECTRIC COOPERATIVES.

F.W. STAR TELE

ANALYSIS

Pork-free, with plenty of bacon

Fact check: Obama tries to have it both ways on pork.

By CALVIN WOODWARD The Associated Press

WASHINGTON — At least Route 31 is a road to somewhere.

President Barack Obama had it both ways Monday when he promoted his stimulus plan in Indiana and later at a prime-time news conference. He bragged in Indiana about getting Congress to produce a package with no pork, yet boasted it will do good things for a Hoosier highway and a downtown overpass, just the kind of local projects lawmakers lard into big spending bills.

Obama's sales pitch on the enormous package he wants Congress to make law has sizzle as well as steak. He's projecting job creation numbers that may be impossible to verify and glossing over some ethical problems that bedeviled his team.

In recent years, the so-called Bridge to Nowhere in Alaska came to symbolize the worst excesses of congressional earmarks, a device that allows a member of Congress to add money for local projects in legislation, practically under the radar.

Nothing so bold, or specific, as that now-discarded bridge project is contained in the stimulus package. That's not to say the package steers clear of waste or parochial interests. Obama played to such interests Monday, speaking at one point as if he'd come to fill potholes.

A look at some of Obama's claims in Elkhart, Ind., and the news conference called to make his case to the largest possible audience:

Obama: "Not a single pet project," he told the news conference. "Not a single earmark."

He said in Elkhart: "Understand, this bill does not have a single earmark in it, which is unprecedented for a bill of this size. . . . There aren't individual pork projects that members of Congress are putting into this bill."

The facts: There are no "earmarks," as they are usually defined, inserted by lawmakers in the bill. Still, some of the projects bear the prime characteristics of pork — tailored to benefit specific interests or to have thinly disguised links to local projects.

For example, the latest version contains $2 billion for a clean-coal power plant with specifications matching one in Mattoon, Ill.; $10 million for urban canals; $2 billion for manufacturing advanced batteries for hybrid cars; and $255 million for a polar icebreaker and other "priority procurements" by the Coast Guard.

Obama: "They'll be jobs building the wind turbines and solar panels and fuel-efficient cars that will lower our dependence on foreign oil and modernizing our costly healthcare system that will save us billions of dollars and countless lives."

... ould allocate about

Obama: "We also inherited the most profound economic emergency since the Great Depression."

The facts: This could turn out to be the case. But as bad as the economic numbers are, the unemployment figures have not reached the levels of the early 1980s, let alone the 1930s — yet.

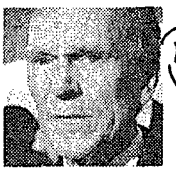
A total of 598,000 payroll jobs vanished in January — the most in nearly 35 years — and the unemployment rate jumped to 7.6 from 7.2 percent the month before. The most recent high was 7.8 percent in June 1992.

And the jobless rate was 10.8 percent in November and December 1982. Unemployment in the Great Depression ranged for several years from 25 percent to close to 30 percent.

Obama: "I've appointed hundreds of people, all of whom are outstanding Americans who are doing a great job. There are a couple who had problems before they came into my administration, in terms of their taxes. . . . I made a mistake . . . I don't want to send the signal that there are two sets of rules."

He added: "Everybody will acknowledge that we have set up the highest standard ever for lobbyists not working in the administration."

The facts: Two of his appointees, former Senate Democratic leader Tom Daschle for secretary of health and human services and Nancy Killefer as his chief compliance officer, dropped out after reports



Daschle

ENCLOSURE (7)

ELECTRICITY IN TEXAS

FWST 2-10-09

Coalition blames deregulation for higher power costs

But the group wants to modify, not repeal, deregulation.

By DAVE MONTGOMERY
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AUSTIN — A coalition of more than 100 Texas cities, including Fort Worth and Arlington, is pressing for changes in the states 10-year-old electricity deregulation law, saying the landmark statute has contributed to spiraling electricity prices, abuses in the wholesale power market and reduced profits for businesses.

Cities Aggregation Power Project unveiled its findings Monday in an 82-page study of the impact of 10 years of deregulation in Texas. While the report blamed deregulation for increasing Texas electricity prices at rates well above the national average, coalition leaders said they are more interested in improving the law than repealing deregulation.

"As this report illustrates, consumers have paid too much for too long under deregulation," CAPP Chairman

Electricity: Report is 'camouflage' for an 'opt-out agenda,' industry group says

CONTINUED FROM 1C

today than when prices were regulated," the Association of Electric Companies of Texas said. "The Texas competitive market is working, even if CAPP thinks otherwise."

Tarrant County

In addition to Fort Worth and Arlington, CAPP members include Benbrook, Burleson, Euless, Grand Prairie, Grapevine, Haltom City, Mansfield, North Richland Hills, Richland Hills and Saginaw. Johnson County is also a member.

An interim report by the 80th Legislature's House Committee on Regulated Industries, released last month, blamed spiraling electricity rates on rising costs of natural gas, which generates most of Texas' electricity. Natural gas prices were about $2 per British thermal unit when deregulation began, but soared as high as $13 per Btu during 2008, the legislative report said.

Conflicting views about the success of deregulation point to a contentious battle in the 2009 Legislature over electricity rates. Several lawmakers say they plan to pursue legislation to protect consumers from rising costs on a number of fronts, including insurance and utility rates.

Rep. Phil King, R-Weatherford, who headed the Regulated Industries Committee until the current session began, said efforts will be made to "re-regulate" electricity to give more control to the Public Utility Commission or city councils.

King Davis

Sen. Wendy Davis, D-Fort Worth, said she supports creating pools of electricity consumers, who, through strength in numbers, could collectively negotiate for the most favorable rates.

The CAPP report examined the impact of Senate Bill 7, which the Legislature passed in 1999 in what its sponsors said was an attempt to rein in rising electricity rates.

"The number of electric providers has increased since the market deregulated," the report said. "However, when it comes to the impact on consumer prices and the establishment of a truly competitive market, the legislation fails to live up to the early promises."

The report found that "Texans paid prices below the national average in the years leading up to Senate Bill 7. Since the market opened, prices have climbed above the national average. Deregulated prices paid by Texas households have increased by a greater percentage than in any other deregulated state with retail competition."

More accountability

The study made several recommendations to "transform the deregulated market into a truly competitive one," including demanding more accountability by the Electric Reliability Council of Texas, which manages the state's power grid, and greater protections against wholesale market abuses.

The coalition also supports "opt-out aggregation," which would allow cities, counties and other entities to purchase bulk-rate power on behalf of their constituents. Residents who do not want to participate could opt out of the plan by checking a box on an advisory notice from the governing body.

If ratepayers do not respond in a given time, "it's assumed they want to participate and the political subdivision will negotiate a bulk-rate electricity deal on their behalf," the study said.

John W. Fainter Jr., president and CEO of Electric Cos. of Texas, called CAPP's study "camouflage for the group's opt-out agenda."

The opt-out plan would strip away "individual consumer choice in favor of city-government one-size-fits-all control," Fainter said.

ENCLOSURE (8)

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Federal Reserve Bank of St. Louis

REVIEW

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ENCLOSURE (9)

Disallowances and Overcapitalization in the U.S. Electric Utility Industry

Stratford Douglas, Thomas A. Garrett, and Russell M. Rhine

Regulation of an industry often produces unintended consequences. Averch and Johnson (1962) argue that certain regulation of electric utilities provides utilities the incentive to purchase an inefficiently large amount of capital. Another possible and related unintended consequence of electric utility regulation is that regulatory cost disallowances on capital may also increase utilities' incentives to overcapitalize. The authors provide theoretical evidence that capital expenditure disallowances will increase the Averch and Johnson effect in some instances and thus may have contributed to the overcapitalization problem that regulation was designed to discourage. Our model shows that disallowances can reduce the rate of return on investment and thereby increase the Averch and Johnson distortion. (JEL D42, L43, L51)

Federal Reserve Bank of St. Louis *Review*, January/February 2009, *91*(1), pp. 23-31.

All households, firms, and government entities depend on one or more of the 3,170 electric utilities in the United States to provide a reliable source of energy. These electric companies consist of investor-owned, publicly owned, cooperative, and federal utilities.[1] Only 8 percent of these utilities are investor owned, but they produce approximately 75 percent of the total generating capability. Publicly owned and federal utilities each generate about 10 percent of the country's electricity, and cooperatives generate the remaining 4 percent. The revenue from retail sales (to ultimate consumers) for all electric utilities amounted to $326 billion in 2006 and represents about 2.5 percent of gross domestic product.

The industry increased output by 20 percent from 1995 to 2006, and generation capacity is expected to grow by another 8 percent over the next five years. Currently, nearly 98 percent of the existing capacity consists of fossil fuel power plants, nuclear reactors, hydroelectric power plants, and other renewable energy sources.[2] Although these sources all contribute to the total generation, fossil fuels generate the majority of electricity. Natural gas, coal, and petroleum supply 41 percent, 31 percent, and 6 percent of generation capabilities, respectively. Nuclear, hydroelectric, and other renewable sources comprise approximately 19 percent.[3] To date, the academic literature has devoted much attention to the U.S. electric

[1] Investor-owned utilities are private corporations that operate to produce a rate of return for their investors. Publicly owned utilities are nonprofit agencies owned by local governments. Cooperatives are owned by members of a community and typically operate in rural areas where investor-owned utilities are not economically feasible. Federal electric utilities are owned and operated by the federal government.

[2] Other renewable sources, as defined by the Energy Information Administration (2007), include wood, black liquor, other wood waste, municipal solid waste, landfill gas, sludge waste, tires, agriculture by-products, other biomass, geothermal, solar thermal, photovoltaic energy, and wind.

[3] For details, see Energy Information Administration (2007).

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ENCL (9)

utility industry. The primary reason for such interest is that electricity is used by all Americans, and firms in the industry enjoy a monopolistic market structure, at least at the distribution level. Although the academic literature is broad in scope, most articles fall into two categories. The first category is cost analysis—primarily the measuring of scale economies. That is, researchers attempt to determine where firms are operating on their long-run average cost curves and subsequently determine whether production costs can be lowered by having firms increase or decrease their scale of production. The second category, much larger than the first, is analysis of the regulatory aspect of the industry and the unanticipated consequences of those regulations. Relevant regulations involve not only those related to the environmental impact of electricity generation but also those regulating profits by setting the price that firms are allowed to charge for their electricity.

One specific issue that has sparked much attention is the overcapitalization of the electric utility industry—that is, electric utilities hold a quantity of capital that is greater than the cost-minimizing quantity. Averch and Johnson (1962; hereafter A-J) argued that privately owned utilities invest in capital beyond the cost-minimizing level in response to the incentives offered by regulation. The authors showed how a regulator, by tying a firm's allowed profit to its capital stock and offering a rate of return on capital that exceeds the marginal cost of capital, provides the firm the incentive to purchase an inefficiently large amount of capital. The A-J model has been thoroughly analyzed, discussed, and tested in the academic literature.[4]

The key aspect of the A-J model is that regulation of electric utilities results in the unintended consequence of overcapitalization. We argue in this paper that the A-J model is not complete and can thus be expanded to account for another aspect of electric utility regulation: A regulator's denial of cost recovery for some portion of the utility's capital expenditures provides an additional incentive for firms to overcapitalize. The basis for this incentive is that a portion of the firm's capital is excluded from the calculation of profit by the regulator. Firms will thus invest more in capital to maintain or increase profits.

One purpose of the regulatory disallowances was to make utility management accountable for cost overruns and thereby reduce their incentive to overcapitalize. Lyon and Mayo (2005) state that the disallowances were punitive and directed toward poorly managed firms. The disallowances succeeded in the sense that they apparently reduced utilities' appetite for constructing large new power plants; few large power plants and no new nuclear plants have been initiated in the past 20 years. But a subtler question remains as to whether the disallowances increased the efficiency of utilities' capital purchase decisions given the higher cost of capital.

We preface our theoretical framework by first providing an overview of the economic effects of regulation, including unintended consequences. We then provide a conceptual framework for overcapitalization that serves as a basis for our theoretical model, which expands the A-J model. We find theoretical support for the proposition that regulatory cost disallowances increase utilities' incentives to overcapitalize. Thus, the overcapitalization in the electric utility industry is a result not only of the A-J effect, but also of regulatory denial of cost recovery for a portion of a utility's capital expenditures.

THE ELECTRIC UTILITY INDUSTRY, MONOPOLY, AND REGULATION

The electric utility industry, like most public utilities, is considered a natural monopoly and has faced state and local regulations since the late

[4] Nelson (1985) attributes the overcapitalization to utility overestimates of future demand growth in the late 1970s and early 1980s. Nemoto, Nakanishi, and Mandono (1993) find evidence of overcapitalization of electric utilities in Japan and attribute it to the A-J effect. Thompson, Islam, and Rose (1996) also find evidence of overcapitalization in the U.S. electric utility industry but they make no conclusions as to its source. Rungsuriyawiboon and Stefanou (2007) find evidence of the A-J effect using a dynamic duality model of intertemporal decisionmaking. Tests of the A-J effect in the electric utility industry using a production function rather than a cost function empirical specification have yielded conflicting results. Spann (1974) and Courville (1974) find evidence for the A-J effect using a translog and a Cobb-Douglas production function, respectively. Boyes (1976) uses a system of input demand functions derived from a production function and finds no evidence supporting the A-J theory.

1800s.[5] As demonstrated in Figure 1, natural monopolies, by definition, exhibit decreasing average and marginal costs over a wide range of output because of high fixed costs (plants, equipment) and low variable and marginal costs.[6] Thus, one firm can produce most or all of the electricity demanded by consumers more cheaply than could multiple firms. Monopoly pricing involves charging a price (P_M) greater than the marginal cost (MC) of production and producing an output level (Q_M) less than that under perfect competition (Q_C), therefore resulting in a loss in economic efficiency.

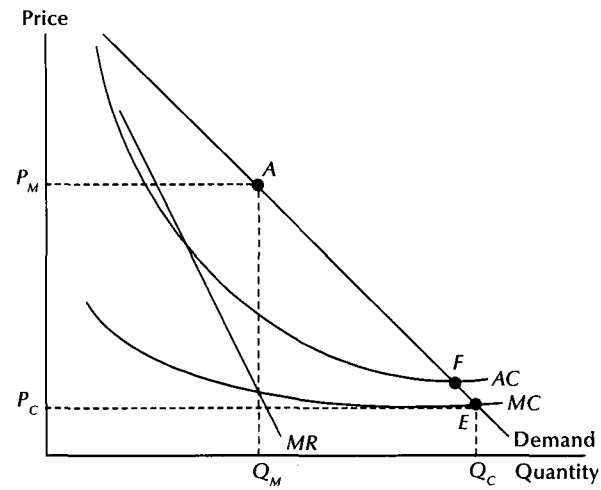
The basic model of monopoly regulation posits that regulators aim to reduce the price charged by the monopolist and expand the monopolist's output. One common approach is to set the price equal to the marginal cost of production (point E). This mimics pricing under perfect competition. However, given the cost structure of monopoly, marginal costs are below average costs (AC), so marginal cost pricing often results in a financial loss for the monopolist. Average cost pricing deviates from the competitive price and output level (because average costs > marginal costs), but still results in a price and output level (point F) that approximates the competitive solution.

Although in theory the regulation of monopoly pricing is fairly straightforward, in reality it may be difficult to achieve the price and output levels that would exist under perfect competition, given that regulation occurs in political markets. As first discussed by Stigler (1971), consumers and producers have different objectives with regard to monopoly prices—consumers prefer lower prices and greater output, whereas the monopolist prefers higher prices and lower output. According to Stigler, it is reasonable to assume that both groups exert political pressure to set regulatory outcomes in their favor.

Stigler's model shows that a vote-maximizing regulator will set a utility's sale price of electricity such that the marginal gain in support from producers is just offset by the loss in consumer votes. Thus, in Figure 1, political competition between consumers and producers will ensure that the regulated price will lie somewhere between P_M and P_C and the regulated output will lie somewhere between Q_M and Q_C. The exact location will depend on the relative strengths of consumer and producer groups in exerting political pressure. Given that the cost of organizing producer groups is much less than the cost of organizing thousands or millions of consumers (Olson, 1965; Peltzman, 1976), producers are likely to exert more political pressure than are consumers; as a result, regulation will likely favor producers.

Figure 1

Structure of Natural Monopoly



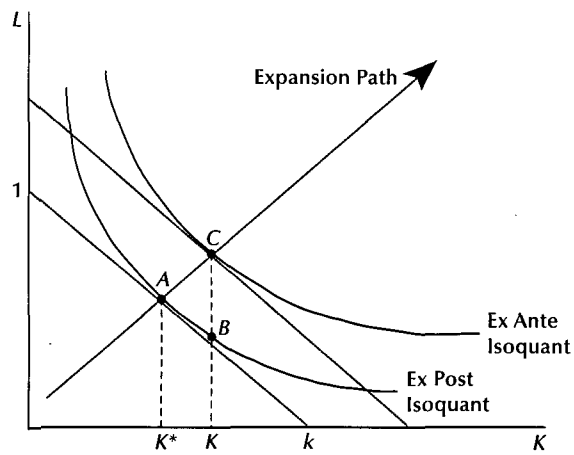
Another aspect of regulation that has garnered attention in the literature—and is most relevant for the purpose of our paper—is the potential for unintended consequences as a result of regulation. Unintended consequences are, as the term suggests, unanticipated effects from policy actions. Examples from other industries include those described by Hall, Propper, and Reenan (2008), who find that regulated pay for medical staff across geographically heterogeneous labor markets results in problems with recruiting, retaining, and motivating high-quality workers, which ultimately

[5] See Warkentin-Glenn (2006) for a history of the electric utility industry.

[6] The cost curves shown in Figure 1 are for a representative natural monopolist and may not represent the identical cost and pricing structure of all monopolists.

Figure 2

Overcapitalization



affects hospital performance; and Nelson (2003), who finds that the regulation of alcohol advertising initiated to restrict demand for one type of product creates increased demand for other alcoholic products.

As mentioned earlier, overcapitalization in the electric utility industry is one unintended consequence of regulating the industry. Specifically, a firm is motivated to purchase an inefficiently large amount of capital because a regulator ties the firm's allowed profit to its capital stock. We argue that overcapitalization will be exacerbated when a portion of a firm's capital is excluded from the calculation of profit by the regulator, and firms will thus invest more in the type of capital not excluded from the profit calculation to maintain or increase profits.

Overcapitalization Explained

Many industry observers, both inside and outside academia, believe that the electric utility industry in the United States is overcapitalized. Our theoretical model presented in the next section focuses on overcapitalization, and so we discuss overcapitalization in general to better lay the foundation for our theoretical model.

In Figure 2, K^* is the cost-minimizing capital stock for production along the ex post isoquant. Suppose we observe a firm producing inefficiently at point B using capital stock, K. The A-J model explains a firm's decision to produce at point B as a rational response to regulatory incentives. Once it arrives at B, it will tend to stay there. More intuitively, the price that an electric utility is allowed to charge for its output is set by industry regulators. The regulators choose a price so that the firm will generate enough revenue to cover the operating costs, which include labor expenses, and to generate enough profit to pay the investors a fair rate of return on capital. Thus, with production inputs of capital and labor, the firm knows that an increase in labor expenses will be offset by an increase in revenues by the same amount. However, an increase in capital investment will be offset by an increase in revenue that is greater than the increased costs to ensure that investors receive a fair rate of return. Thus, the firm has an incentive to increase its investment in capital. Our theoretical exercise in the next section of the paper determines whether a firm will choose point B instead of A because of regulatory incentives or for some other reason.

Overcapitalization can appear in many different guises. Utilities that need new capacity might avoid leasing available power plants, preferring to build their own. They might resist selling power plants that they do not need. They might resist joining efficient power pools. They might inefficiently choose capital-intensive expenditures for pollution abatement (such as scrubbers) over less capital-intensive alternatives (such as co-firing or "green power" purchases). They also might appear overeager to move to underground distribution systems. They might impose excessive safety and reliability standards on themselves, resulting in a "reserve margin" in the form of an idle generation plant that exceeds any rational requirements. As Kahn (1988) explains, utilities may have "excessively high (because excessively costly) standards of reliability and uninterruptibility of service, with correspondingly high and costly specification for the equipment they employ." Finally, utilities may allow themselves to be overcharged for capital equipment, as occurred in the

electrical equipment manufacturers' price conspiracy of the 1950s (Emery, 1973).

Overcapitalization also can occur because of forecast error when the firm overestimates future demand. Faulty forecasting is a reasonable suspect as a cause of utility overcapitalization. The late 1970s and early 1980s saw both a decrease in the U.S. rate of economic growth and, because of the increase in relative energy prices, the first significant divergence between rates of growth in the economy and in the demand for energy. Traditional methods of demand forecasting failed to account for these trends, and utilities continued to build large power plants to serve demand that, in many cases, never materialized. Exacerbating this trend was the greatly increased cost of nuclear power as a result of the regulatory response to the Three Mile Island incident in 1979.

Large generation plants must be built well before anticipated demand is realized. If the ex ante isoquant in Figure 2 were the anticipated level of demand, then K would be the ex ante cost-minimizing level of capital. However, when actual demand is realized ex post, the firm finds itself operating off its least-cost expansion path at point B. If presented with efficient incentives, the firm would move to point A as quickly as possible. Thus, if overcapitalization arose solely in response to overestimation of demand, then overcapitalization should decline over time as the firm adapts to the unexpectedly low-demand environment.

Past studies on adapting to a world in which regulators occasionally deny recovery or return on part or all of a utility's capital investment have shown varying results. Lyon (1991), Gal-Or and Spiro (1992), and Gilbert and Newbery (1994) argue that capital disallowances may decrease investment, whereas Tiesberg (1993) finds that capital disallowances may increase investment. The disallowance might be expected to increase the riskiness of the firm's investments, and this increased riskiness of capital could cause utilities to reduce their use of capital. If so, the model presented in this paper identifies a countervailing incentive—a tendency to overcapitalize even further because of the disallowance effect on a utility's de facto allowed rate of return.

The A-J Model

The A-J model depicts a profit-maximizing firm that is subject to a regulated rate of return. The production function specification may be inappropriate for the traditional electric utility, given the generally accepted stylized facts of the industry. A production function assumes that a firm maximizes output for a given level of inputs; however, a traditional electric utility is more likely to find its output level fixed because its price is regulated within its geographically defined service area. It will choose its input quantities endogenously in response to largely exogenous factor market prices. Therefore, the dual cost function, in which input quantities are chosen in response to fixed factor prices and output levels, is a better model for the behavior of the electric utility.

A-J demonstrate that if the allowed rate of return exceeds the cost of capital, then a firm's capital stock will increase to the point where the cost of capital exceeds its marginal product. Let $R(Y)$, P, Y, P_i, K, L, and s_K be the revenue function, output price, the quantity of output, the price of the inputs, the quantity of capital, the quantity of labor, and the allowed rate of return, respectively, where $i = K, L$. The price of capital, P_K, is the interest cost in holding plant and equipment, which differs from the acquisition cost of capital, c. We assume that $c = 1$; thus, the regulator constrains the firm to an allowed rate of return, s_K, that will cover the physical quantity of capital, $c \cdot K$, after operating expenses are deducted from revenue. That is,

$$\frac{PY - P_L L}{K} \leq s_{K^*}.$$

Equation (1) below is the Lagrangian for a profit-maximizing firm. The firm maximizes profits subject to two constraints. The first constraint is the regulatory-constrained allowed rate of return, and the second constraint is output that is subject to the production function, $Y \leq F(K, L)$. Equations (2) through (6) are the first-order conditions that result from maximizing equation (1):

$$\begin{aligned} \mathcal{L}(K, L, \lambda, \mu) &= R(Y) - P_K K - P_L L \\ &+ \lambda\left(s_K K - R(Y) + P_L L\right) + \mu\left(F(L, K) - Y\right) \end{aligned} \tag{1}$$

$$\frac{\delta \mathcal{L}}{\delta L} = P_L(\lambda - 1) + \mu F_L = 0 \tag{2}$$

$$\frac{\delta \mathcal{L}}{\delta \mu} = F(K, L) - Y_L = 0 \tag{3}$$

$$\frac{\delta \mathcal{L}}{\delta K} = -P_K + \lambda s_K + \mu F_K = 0 \tag{4}$$

$$\frac{\delta \mathcal{L}}{\delta Y} = (1 - \lambda)R' - \mu = 0 \tag{5}$$

$$\frac{\delta \mathcal{L}}{\delta \lambda} = s_K K - R + P_L L = 0. \tag{6}$$

We assume that $R' > 0$, $F_L > 0$, $F_K > 0$ and that the firm earns a profit (i.e., $s_K > P_K$). We also set $G = R(F(K,L))$ and assume that it is concave so that the second-order condition for maximization is satisfied. Therefore, the marginal revenue products of labor and capital are $G_L = R'F_L$ and $G_K = R'F_K$, respectively. Finally, we assert that $1 > \lambda > 0$ and $\mu > 0$ (Takayama, 1993). By combining equations (2) and (5), it follows that the firm uses labor efficiently: G_L equals the wage; but by combining equations (4) and (5), it follows that firms do not use capital efficiently: G_K is less than P_K, as shown in equation (7):

$$G_L = P_L, \quad G_K < P_K. \tag{7}$$

By totally differentiating equation (6) with respect to s_K and applying the efficient use of labor from equation (7), the A-J effect can be produced and is shown in equation (8).[7] Decreasing the allowed rate of return results in the firm increasing its capital stock:

$$\begin{aligned} & K + s_K \frac{dK}{ds_K} - G_K \frac{dK}{ds_K} + P_L \frac{dL}{ds_K} - G_L \frac{dL}{ds_K} = 0 \\ & \Rightarrow K = (G_K - s_K)\frac{dK}{ds_K} + (G_L - P_L)\frac{dL}{ds_K} \\ & \Rightarrow \frac{dK}{ds_K} = \frac{K}{G_K - s_K} < 0. \end{aligned} \tag{8}$$

[7] See Takayama (1993, pp. 215-16) for a more detailed discussion and rigorous proof.

The capital stock, K, plays a twofold role in a regulated firm, as both a productive input and the rate base for computing allowed profit. The rate base is defined as the amount of capital expenditures that the regulator uses to determine the costs that should be passed on to consumers. The regulator determines whether expenditures on capital may be included in the firm's rate base and therefore paid for by utility customers. If a portion of a firm's capital expenditure was not prudently incurred, then the regulator may disallow that portion (i.e., exclude it from the rate base). Many utilities incurred massive disallowances in the 1980s, primarily because of cost overruns and tighter safety standards for nuclear power plants.

We suggest that the disallowances in fact exacerbated the A-J effect in some instances, thereby reducing the efficiency of capital use. The exact effect depends on whether the disallowed power plant is capable of producing electricity for sale. Suppose that the regulator disallows a capital expenditure on a power plant that represents some proportion, δ, of the utility's total rate base, where $0 < \delta < 1$. If the power plant is never completed or is not allowed to operate, then the full capital expenditure appears as a cost, but only the allowed portion appears in the rate base and the production function.[8] Thus, the disallowed capital expenditure is useless—it is not generating electricity or revenues for the firm. The Lagrangian for disallowed useless capital is shown by equation (9):

$$\begin{aligned} & \mathcal{L}_{(useless)}(K, L, \lambda, \mu) = R(Y) - P_K K - P_L L \\ & + \lambda\left(s_K(1-\delta)K - R(Y) + P_L L\right) \\ & + \mu\left(F\left((1-\delta)K, L\right) - Y\right), \end{aligned} \tag{9}$$

where $R(Y) \equiv G\left((1-\delta)K, L\right)$.

The firm incurs the full cost of purchasing K, but the allowed rate of return, s_K, applies only to the

[8] An example of a completed power plant that was unable to be used for production is the Shoreham nuclear power plant in New York; on completion, it was never allowed to operate because of safety concerns.

rate base $(1-\delta)K$ and only $(1-\delta)K$ is productive. Essentially, the disallowance reduces the firm's capital stock, both as productive input and as a portion of the rate base, while retaining a sunk cost of $P_K\,\delta K$ on the firm. Equations (10) through (14) are the first-order conditions that result from the maximization of equation (9):

$$(10)\quad \frac{\delta\mathcal{L}}{\delta L} = -P_L(\lambda-1)+\mu F_L = 0$$

$$(11)\quad \frac{\delta\mathcal{L}}{\delta\mu} = F\big((1-\delta)K,\ L\big)-Y = 0$$

$$(12)\quad \frac{\delta\mathcal{L}}{\delta K} = -P_K+\lambda(1-\delta)s_K+(1-\delta)\mu F_K = 0$$

$$(13)\quad \frac{\delta\mathcal{L}}{\delta Y} = (1-\lambda)R'-\mu = 0$$

$$(14)\quad \frac{\delta\mathcal{L}}{\delta\lambda} = s_K(1-\delta)K-R+P_L L = 0.$$

The same first- and second-order conditions as previously stated hold, and the firm earns a profit, $(1-\delta)s_K > P_K$. Combining equations (10) and (13) indicates efficient use of labor, as shown in equation (15):

$$(15)\qquad G_L = P_L.$$

The incremental input distortion caused by a change in the allowed rate of return, s_K, is the same in the model with a useless capital disallowance as it is in the classic A-J model. This can be seen by totally differentiating equation (14) with respect to s_K and applying equation (15). Equation (16) shows the effect of a change in s_K on the capital stock, K:

(16)

$$(1-\delta)K+(1-\delta)s_K\frac{dK}{ds_K}-(1-\delta)G_K\frac{dK}{ds_K}$$
$$+P_L\frac{dL}{ds_K}-G_L\frac{dL}{ds_K}=0$$
$$\Rightarrow (1-\delta)K=(G_K-s_K)(1-\delta)\frac{dK}{ds_K}+(G_L-P_L)\frac{dL}{ds_K}$$
$$\Rightarrow \frac{dK}{ds_K}=\frac{K}{G_K-s_K}<0.$$

Although no change occurs in the marginal effect of an increase in the allowed rate of return, an increase in the disallowance of useless capital does, in fact, increase the amount of capital purchased. Equation (17) is the result of totally differentiating equation (14) with respect to δ, and it indicates that an increase in the scale of the disallowance causes an increase in K:

$$(17)\qquad \frac{dK}{d\delta}=\frac{s_K K}{(1-\delta)(s_K-G_K)}>0.$$

More commonly, the disallowed capital is capable of producing electricity (i.e., it is "useful"), but it is either not needed to serve the utility's captive customer base or its construction costs are judged excessive. In the latter case, the utility will take the disallowed costs out of its rate base, but it may continue to operate and sell the power either to its customers or off-system on the wholesale market. Thus, as shown in equation (18), the disallowed unit remains in the production function

$$(18)\quad \begin{aligned}&\mathcal{L}_{useful}(K,\ L,\ \lambda,\ \mu)=R(Y)-P_K K-P_L L\\&+\lambda\big(s_K(1-\delta)K-R(Y)+P_L L\big)\\&+\mu\big(F(K,\ L)-Y\big),\end{aligned}$$

where $R(Y)\equiv G(K,\ L)$.

Because the first-order conditions with respect to Y and L are identical to that of $\mathcal{L}_{useless}$, $G_L = P_L$ still holds. However, the remaining first-order conditions do differ and are shown as equations (11′), (12′), and (14′):

$$(11')\qquad \frac{\delta\mathcal{L}}{\delta\mu} = F(K,\ L)-Y = 0$$

$$(12')\qquad \frac{\delta\mathcal{L}}{\delta K} = -P_K+\lambda(1-\delta)s_K+\mu F_K = 0$$

$$(14')\qquad \frac{\delta\mathcal{L}}{\delta\lambda} = s_K(1-\delta)K-R+P_L L = 0.$$

The effect of changing the allowed rate of return, s_K, is somewhat different in the presence of useful but disallowed capital,

$$\frac{dK}{ds_K} = \frac{(1-\delta)K}{G_K - (1-\delta)s_K} < 0. \tag{19}$$

The inequality in equation (19) holds if the post-disallowance rate of return exceeds the marginal revenue product of capital: that is, $(1-\delta)s_K > G_K$. Note that if there were no disallowed capital in equation 19, the result would be identical to the A-J model shown by equation (8). However, equation (20) indicates that the A-J distortion effect of regulatory tightening for disallowed *useful* capital exceeds the distortion for a firm with disallowed *useless* capital:

$$\frac{dK}{ds_{K(useful)}} = \left[\frac{(1-\delta)(s_K - G_K)}{(1-\delta)s_K - G_K}\right]\frac{dK}{ds_{K(useless)}} \quad \text{and} \quad \frac{(1-\delta)(s_K - G_K)}{(1-\delta)s_K - G_K} > 1. \tag{20}$$

In addition, as equation (21) shows, an increase in the disallowance of useful capital has a positive marginal distortive effect on the capital stock:

$$\frac{dK}{d\delta} = \frac{s_K K}{(1-\delta)s_K - G_K} > 0. \tag{21}$$

The marginal distortive effect of increasing δ for useful capital (equation (21)), exceeds that of useless capital (equation (17)), by the same factor as in equation (20): that is, $[(1-\delta)(s_K - G_K)]/[(1-\delta)s_K - G_K]$.

Thus, the modified A-J model predicts that a firm subject to a capital disallowance will overcapitalize to a greater degree than a firm without a disallowance. More intuitively, our results indicate that because a utility's profit is equal to $[(1-\delta)s_K - P_K]K$, the existence of disallowed capital, δ, will cause the utility's profit to decrease, all other things equal. For the firm to regain those lost profits, either its capital stock, K, or the allowed rate of return, s_K, must increase. Consequently, the only way to regain the profits is by investing in capital because its allowed rate of return cannot be changed by the firm, as it is set by the regulators.

In addition, a firm with disallowed capital that is operable will experience a greater A-J distortion than a firm with disallowed capital that is not operable or a firm with no disallowed capital. This difference is due to the fact that the operable disallowed capital continues to generate revenue for the firm; subsequently, the marginal revenue product of capital is not reduced by the existence of capital that generates no revenue.

CONCLUSION

We provide theoretical evidence that capital expenditure disallowances reinforce the Averch-Johnson effect and thereby may have contributed to the overcapitalization problem they were designed to decrease. The theoretical model shows that disallowances, especially of useful plants, reduce the de facto allowed rate of return on capital and thereby increase the Averch-Johnson input distortion. All these results support the idea that overcapitalization is a profit-maximizing response to rate-of-return regulatory incentives and not a mistake caused by incorrect demand forecasting. These results have some relevance to current policy. Regulators and regulated firms in several industries, including natural gas, electricity, and telecommunications, are taking capital assets out of their rate bases. Currently, the reason for such action is not imprudence but deregulation. Our results suggest that the way in which this process occurs matters. In particular, taking the assets out of the rate base, but leaving them in the hands of a regulated firm that is subject to an overall rate-of-return constraint, could result in inefficient overcapitalization. In general, regulators need to be aware that their policies could have unanticipated consequences.

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