PUBLIC COMMENTS ON DRAFT GUIDE (
DG) -8039
(Published as Regulatory Guide (RG) 8.40)

NO.	SOURCE	ISSUE	COMMENT	DISPOSITION
1	San Onofre Nuclear Generating Station	The use of the acronym EDEX is confusing and should be simplified.	Here's a proposal for such a simplification: *Effective Dose Equivalent* (EDE) means the external dose that has the same risk as an equal amount of uniform whole body dose. *Committed Effective Dose Equivalent* (CEDE) means the internal dose that has the same risk as an equal amount of uniform whole body dose. *Total Effective Dose Equivalent* (TEDE) means the sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures). TEDE is the arithmetic summation TEDE = EDE + CEDE. Thus, there would be 3 unique dose quantities, one for total, one for external, and one for internal effective dose equivalents. One short coming to this proposal is that "effective dose equivalent" meaning $H_E = \Sigma W_T H_T$ is widely defined elsewhere and would create confusion. On the other hand, the proposed simplification would have benefits beyond Part 20.	As noted in the comment, the EDE, as defined in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20, "Standards for Protection against Radiation," and as defined and widely used elsewhere, is independent of the location of the source of radiation dose. The definition of TEDE in 10 CFR Part 20 does not redefine EDE. The first term in the definition of TEDE is the EDE arising from radiation exposure from sources external to the body. Therefore, the acronym EDEX is coined in this RG to distinguish between EDE and that EDE resulting from those radiation sources external to the body. Therefore, TEDE is the arithmetic summation TEDE = EDEX + CEDE.
2	Nuclear Energy Institute (NEI)	The use of reference dosimeters—comparison with DG-8039 to American National Standards Institute	DG-8039 does not discuss the use of a Reference Dosimeter, which is a single dosimeter worn at one location on the body when multiple dosimeters are not worn. The typical reference location is	ANSI/HPS N13.41-1997 uses a reference dosimeter as part of the guidance on when to initiate multiple badging, not for the

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		(ANSI)/Health Physics Society (HPS) N13.41-1997, "Criteria for Performing Multiple Dosimetry" (page 3, Regulatory Position)	the front of the body at the torso. This dosimeter is used in addition to multi-badges with weighting factors.	purpose of determining EDE. This RG does not endorse the multiple-badging criteria in ANSI/HPS N13.41-1997.
3	NEI	The use of ANSI standard compartment weighting factors (page 3, Regulatory Position)	Please confirm that if a licensee was previously approved to use the ANSI standard compartment weighting factors, then no additional change is required by the licensee.	Yes. This RG identifies methods approved by the U.S. Nuclear Regulatory Commission (NRC) that can be used to meet the provision in 10 CFR 20.1201(c).
4	NEI	Confirmation to use the Electric Power Research Institute (EPRI) method after receiving previous authorization to use the ANSI method (page 3, Regulatory Position)	Please confirm that those utilities that applied for and received authorization to previously use the ANSI standard method will be able to use the EPRI method for EDE.	Yes. This RG identifies methods approved by the NRC that can be used to meet the provision in 10 CFR 20.1201(c). The ANSI and EPRI methods referred to in this comment are addressed as Regulatory Positions 1 and 2, respectively. Licensees may use any of the methods described regardless of previously receiving a case-by-case approval from the NRC for one or more of these methods.
5	NEI	Partial-body irradiations that shield dosimeters (page 5, Regulatory Position 2(c))	In the case of parallel beam exposures, the whole body is irradiated and the shielding of both dosimeters by the body can be prevented. This is a phenomenon that in general affects the use of all dosimeters and should be considered prior to placement of dosimeters. Personnel are advised to ensure that dosimeters are worn so that at least one of the two dosimeters	The NRC has revised the wording of Regulatory Position 2(c) to clarify the guidance provided.

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			"sees" the major source, or sources of radiation. The radiological work should be conducted in such a way that no shielding material is present between the radioactive source(s) and the dosimeters.	
6	NEI	The EPRI two-dosimeter method for estimating EDE is conservative (page 5, Regulatory Position 2(e)).	An analysis was performed after publication of RIS 2004-01 by EPRI to investigate NRC's concerns regarding source locations within 33 cm from the body. The NRC may be interested in the results of the analysis which was published in the Health Physics Society Journal; X.G. Xu et al., "Effective Dose Equivalent for Point Gamma Sources Located 10 cm Near the Body," *Health Physics*, 91(2): 108–118, August 2006. In that paper, EDE data for point gamma sources at 0.3, 1.0, and 1.5 MeV, which were located 10 cm from the surface of the body were presented. The results of the analyses show that the EPRI Two Dosimeter Method for estimating EDE for source locations ranging from the overhead to the foot are conservative except for two general regions near the front upper thigh and directly overhead. In these instances, alternative placement of the dosimeters should be considered.	The NRC has revised this Regulatory Position 2(e) to include the work done by X.G. Xu, S. Bushart, and R. Anderson referenced in the comment.
7	Dominion Resources Services, Inc.	The first sentence in "Discussion" states that "10 CFR Part 20 breaks the EDE into two components: (1) dose resulting from radioactive sources internal to the body and (2) dose resulting from radioactive sources external to the body."	10 CFR 20.1003 defines Total Effective Dose Equivalent (TEDE) as the sum of the Effective Dose Equivalent (EDE) for external exposures and the Committed Effective Dose Equivalent (CEDE) for internal exposures. While the draft Regulatory Guide correctly references 10 CFR 20 for the definition of EDE, characterization of the first component of EDE as dose	The term EDE is defined in 10 CFR 20.1003 as "the sum of the products of the dose equivalent to the organ or tissue (H_T) and the weighting factors (W_T) applicable to each of the body organs or tissues that are irradiated." The EDE is independent of the location of the

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			resulting from radioactive sources internal to the body is misleading. It is recommended that the first sentence in the "Discussion" section be revised to state the same definition of EDE as given in 10 CFR 20. EDE is the external dose component of TEDE which includes a component derived from stochastic based weighting factors.	source of radiation dose. The definition of TEDE in 10 CFR Part 20 does not redefine EDE. The first term in the definition of TEDE is EDE arising from radiation exposure from sources external to the body. Therefore, the acronym EDEX is coined in this RG to distinguish between the EDE and that EDE resulting from radiation sources external to the body.
8	NRC	The discussion of EDEX dosimetry methods on page 2	The discussion of EDEX dosimetry methods on page 2, does not allow a single badge method for determining EDEX. However, the first the three methods allowed for exposures in a shielding apron (item a. on page 6) uses a single badge reading.	The NRC has revised this discussion.
9	NRC	Top of page 3, second sentence	The term "organ dose" should be revised to "total organ dose."	The NRC has revised the wording of the sentence noted in the comment.
10	NRC	The title of the RG	The word "ESTIMATING" in the title should be changed to "MEASURING" to more correctly reflect that EDEX is being determined by radiation dose measurements.	The NRC has revised the title of this RG.
11	Exelon	Applicability of all the methods in this RG for those licensee that have previously obtained NRC authorization to use one or more method to determine EDEX.	Section C, "Regulatory Position," in DG-8039 proposes two methods for determining EDEX radiation exposures. One method uses the criteria described in ANSI/HPS N13.41-1997 to apply several different dosimeter results. A second method, which is based on research conducted by EPRI, uses a two-dosimeter	Yes. This RG identifies methods approved by the NRC that can be used to meet the provision in 10 CFR 20.1201(c).

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			approach for determining EDEX exposures. Some licensees may already have been authorized to use the criteria described in the ANSI standard for estimating EDEX exposures. Exelon requests clarification as to whether the use of either option is acceptable, as the draft RG would imply, even if a licensee is currently authorized to use the ANSI standard criteria.	