COMMENTS ON THE
DOE RECOVERY ACT REPORTING REQUIREMENTS FOR THE STATE ENERGY PROGRAM (SEP)

Attachment 1 of Section 6.2.2 Reported Metrics lists two metrics that recipients are required to report to the DOE. These metrics alone are insufficient to determine the impact energy savings will have on power plant output and transmission. **A metric measuring reactive power should be included.**

The MWh and MW metrics listed in Appendix 1 represents the energy that is put to work (active energy). In addition to active energy, *induction motors** require reactive energy. Reactive energy is supplied by the utility generators and is transmitted via the same wires as the active energy the motors consume therefore; a well-designed electrical system should minimize the amount of reactive power. During non-peak periods of the day, the generation and transmission of reactive energy is easily accommodated. However, during daily peak periods both active and reactive energy contribute to the total energy demand level that has to be met. Total energy is the vector sum of the active and reactive energy components and is expressed in **MVA**.

Every motor uses a different amount of reactive energy which can generally be supplied economically within the building to decrease the building's overall reactive energy needs. Power factor is the ratio of the active energy to total power and is used to evaluate reactive energy demand. (A power factor of 1 indicates that there is no reactive power being used.) The power factor for commercial buildings is generally thought to be .85 or higher.

Power Patriots recently conducted a survey of over 400 motors in commercial buildings in Massachusetts, Florida, and Puerto Rico which showed the reactive energy requirement in commercial buildings is significantly higher than generally understood. This survey showed that only 15% of the motors tested had power factor .85 or above and nearly half of the motors had power factors below .75. These results indicate that the reactive energy requirements of these motors are significantly higher than is generally understood.

Table 1 Power Factor	<.60	.60 -.64	.65 -.69	.70 -.74	.75 -.79	.80 -.84	>.84	Grand Total
Florida	9%	12%	18%	17%	12%	17%	15%	100%
Massachusetts	20%	0%	0%	3%	20%	44%	13%	100%
Puerto Rico	6%	8%	8%	16%	28%	16%	18%	100%
Overall	**10%**	**10%**	**14%**	**15%**	**16%**	**20%**	**15%**	**100%**

Reducing reactive power would reduce energy generation demand. Reactive energy is controllable and therefore should not be overlooked in the DOE's tracking of energy savings. By adding MVA (which includes reactive energy) as one of the electric energy savings metrics, DOE would have the information needed to complete the picture.

**Examples of induction motors include the motors used in HVAC, industry, refrigeration, and pumps. Induction motors consume over 60% of the electric energy produced in the US.*

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