Proposal for Participant Funding
For Small-Scale, Mobile Voltage Support Equipment

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Background.

- All kinds of proposals for funding of transmission grid expansion, including participant funding, have engendered strong opposition from various quarters.
- Much of the controversy centers on costly, fixed, long-line transmission upgrades that support basic system reliability and that can take many years to complete. Significant dollars can move around depending upon how the costs associated with these upgrades are assigned (e.g., to generators, to local utility loads, to all users of the regional grid).
- However, a limited, special case exists for participant funding of small-scale grid investments aimed at congestion mitigation, where the funding entity can derive the financial benefit associated with the congestion relief afforded by the investment.
- This model is especially appropriate for certain types of small-scale, mobile voltage support equipment that interconnects with the distribution system but provides transmission-level voltage support, thereby increasing the capacity of the transmission system.

Technology Description.

- Examples of mobile voltage support technology include Distributed Superconducting Magnetic Energy Storage (D-SMES), distribution STATCOM systems, "SVC Light," and similar technologies. These technologies are typically small-scale and mobile, provide dynamic reactive power support (and in some cases real power injections), and interconnect at distribution voltage.
- These technologies can, quickly and at relatively low cost, increase available transfer capacity (ATC) on voltage- or angular stability-limited lines and systems by raising the operating limits closer to the full thermal potential on the system. They are not energy resources by themselves.
- Several instances have been identified in which investments of $2 million can yield ATC increases of 80 to 100 MW of capacity, increased power delivery at a cost of $20/kw or $0.25/kw-month (substantially below the cost of new generating capacity or new thermal transmission capacity). Under conditions of market congestion, paybacks can be extremely short. As market conditions change and congestion is alleviated, these units can be relocated with relatively low fixed investment required at each substation (approximately $100k to $200k for distribution transformers, concrete pads, etc.).
- What's the problem? In the past, some utilities with low-cost bottled-up generation on their systems have been unwilling to consider employing such mobile voltage support technology even where the economics appeared compelling. This was because, while the purchase price might represent a relatively small drain on capital budgets, the effect of installing the device on the system would be to allow the low-cost power to flow off the utility's system and benefit other utilities' customers. Under traditional regulation, benefits to the host utility are modest at best.
- The locational marginal pricing framework now envisioned under the Commission's Standard Market Design proposal, if properly implemented, should aim to remove this disincentive and encourage such congestion-easing investments where economic. This proposal would encourage "participant funding" of such devices by converting such situations into profitable merchant opportunities.

Proposal.

1. Fair and open interconnection standards. To eliminate obstacles in franchise law to the use of such technology, any entity should have the right to purchase at its own cost, and interconnect to a distribution utility's system, mobile voltage support technology (e.g., D-SMES, D-STATCOM, SVC Light) within or adjacent to the utility's distribution substation. The owner of such equipment should pay the utility's reasonable costs and adhere to all appropriate standards. For example, units may be installed as of right only where physical space exists, where a reasonable space rental rate is paid, and where all applicable electrical safety standards and other code requirements are observed. To assure proper consideration of distribution-level voltage support technology as a transmission enhancement strategy, there should be no presumption that distribution substation owners (i.e., utilities) have the sole right to purchase and site such equipment.

2. Equipment at distribution voltage that creates a transmission benefit should create CRRs. Where such installations have the effect of supporting transmission-level voltage, the equipment should be classified as a transmission asset and the owner eligible to receive CRRs under the proposed rule.

3. Durability of CRRs for a defined period of time. In order to attract private at-risk investment, the CRRs generated by such investment would need to be "bankable" and durable for some set period of time; e.g., 5-7 years. At the end of this period, the owner of the equipment would retain ownership. The owner would have the right, at that time, to leave the units in place and negotiate a new rate arrangement; relocate them; sell them to the local utility or grid operator at a mutually agreed price; or otherwise dispose of them.

4. Methods of calculation of CRR values. At least two approaches are possible to determine the value of CRRs:
   - Advance determination. An advance determination could be made by the appropriate transmission planning authority (e.g., the ITP) of the value of CRRs to which the owner is entitled at the time of purchase. This determination would be binding for the term that the units are in place and the owner would be eligible for payment based on the availability rate of the unit.
   - Ongoing determination. Alternatively, an ongoing determination of the value of CRRs could be made, based upon the decremental value of the technology in real time (this would require modeling the difference in grid congestion costs that would arise whether the unit were operating or not operating). The owner would have the financial incentive to assure that units are available and performing at times of peak congestion.

Notes.

- Under either case, because the framework applies to economic congestion relief, units would not be eligible for reliability credits and would not be liable for penalties for non-performance.

- It is the intention of this proposal to avoid a "PURPA" type scenario that leads to excessive rates for unreasonably long periods of time. Investments in such technology would be small-scale and limited-risk, avoiding the potential for significant stranded cost exposure.

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