Non-Wires Alternatives to Grid Congestion

NGA Webinar

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Drivers of T&D Investment

• Replacement of aging T&D infrastructure
• Addressing unexpected equipment failures
• Connecting new generation
  – Particularly important for renewables which are often sited in remote locations
• Providing access to more economic sources of energy and peak capacity
• Addressing load growth generally
IOU T&D Investment (US$ bn 2012)
# How EE Savings Can Defer T&D

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Source: *Energy Efficiency as a T&D Resource*, Energy Futures Group, January 2015
T&D Deferrals

• Passive: Occur as a result of broad-based EE programs
  – Con Ed estimated that system-wide efficiency programs reduced planned capital expenditures by more than $1 bn
  – ISO-NE identified over $400 million in previously planned transmission investments in New Hampshire and Vermont that it is now deferring beyond its 10-year planning horizon

• Active: Geographically-targeted EE aimed at avoiding T&D investments
Geographic Targeting: Con Ed

- NYC 2003-2010: $150 mn for EE, DG, fuel-switching
  - ESCO performance contracting
  - Permanent load reductions avoided upgrades in more than 1/3 of Con Ed’s distribution networks
    • 75 million in T&D savings; $300 mn total savings
    • 40 MW savings by 2007
- Brooklyn 2014: $200 mn
  - 41 MW demand-side, 11 MW supply-side by 2018, for deferrals of $1.0 bn in upgrades to 2019 and 2026

Source: Energy Efficiency as a T&D Resource, Energy Futures Group, January 2015
Geo-Targeting: Green Mountain Power

- **1995:** Ski resort load increase of 15 MW
  - Ski resort load management and utility EE in region
  - Goals met, upgrade avoided
  - But GMP ended program despite additional cost-effective savings available

- **Since 2005,** a statewide system planning collaborative
  - Response to proposal for major transmission project (ultimately approved)
  - Geo-targeting of EE through the statewide efficiency utility, *Efficiency Vermont*
  - Mixed results: savings not as high as expected, but upgrades still avoided
Barriers to NWAs

- Financial incentives
  - Utilities make more by investing in “poles and wires” than in lower-cost alternatives
- EE’s multiple attributes/benefits
  - T&D only one of many, but the only one RTOs and TOs think about
- System planning is highly technical, and biased to technical solutions
- System engineers tend to distrust demand resources
- Risk aversion
  - Not only with respect to reliability, but to regulatory approval
- Socialization of transmission costs
  - But not of NWAs
- Responsibility for transmission planning is often dispersed among many parties
Observations, Lessons Learned

• Geographically targeted NWAs can defer some T&D
• T&D deferrals can be very cost-effective
• High value in “modular” NWAs
• Policy is driving most NWA investment
• Implementation:
  – Communication & trust are essential
  – Buy-in from senior management
  – Smaller is easier
  – Distribution NWAs are easier than transmission
  – Integration of EE with other NWAs is very effective
  – Data and analytical tools are important
• Impact assessment
  – Focus on T&D reliability needs
Recommendations

• Least-cost planning to meet T&D needs
• Long-term forecasting of T&D needs
  – To provide sufficient lead time for NWAs
• Screening criteria for NWA analyses
  – Cost, load reduction, and lead-time thresholds
    • BPA currently reassessing its NWA criteria
• Equitable cost allocation for NWAs
  – With, perhaps, congestion-cost management PBR on T&D owners/operators
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