

FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

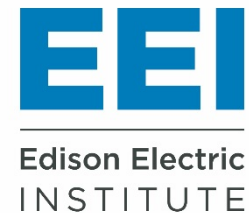
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The Value of Resiliency

An Objective Approach

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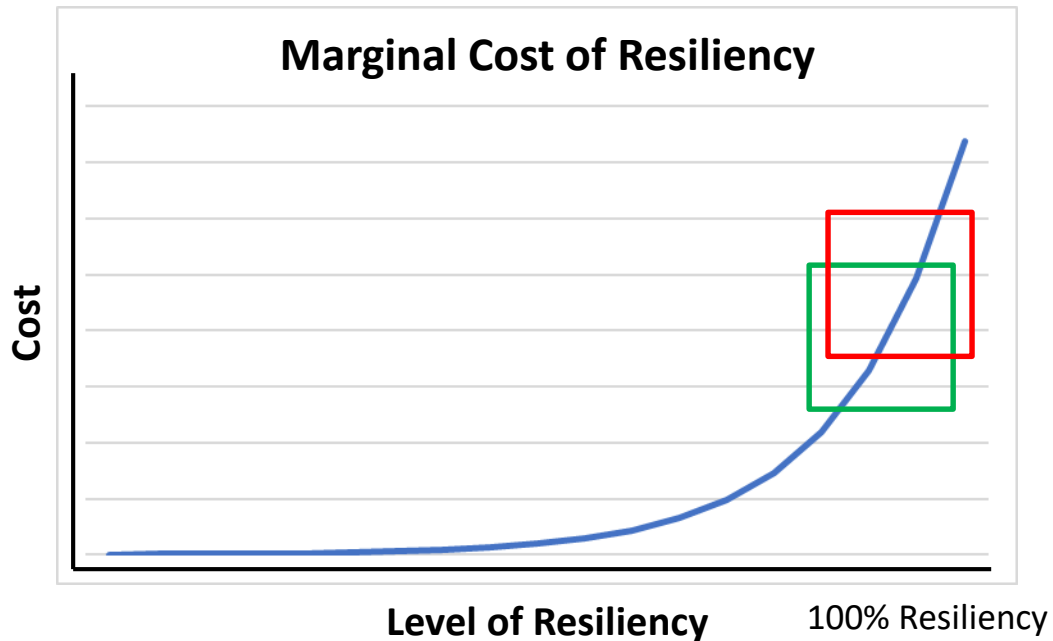
Agenda

- The Cost of Resiliency?
- The Need for a Defined Value of Resiliency
- VOR Equation
- Defining the Variables for Federal Agencies
- Questions / Discussion

The Cost of Resiliency?

- Federal agencies are setting energy resiliency goals
 - But we don't have clear guidance on how those goals relate to the economics of a privately funded project
- Assumption: resiliency generally does not provide energy savings (although it may provide operational savings)
 - “Benefits ancillary” to energy savings – 42 U.S.C. § 8287(a)(1)
- Example:
 - Small energy storage capacity for peak shaving (provides cost savings)
 - Additional energy storage capacity combined with backup generation for resiliency (does not provide cost savings)

The Cost of Resiliency?



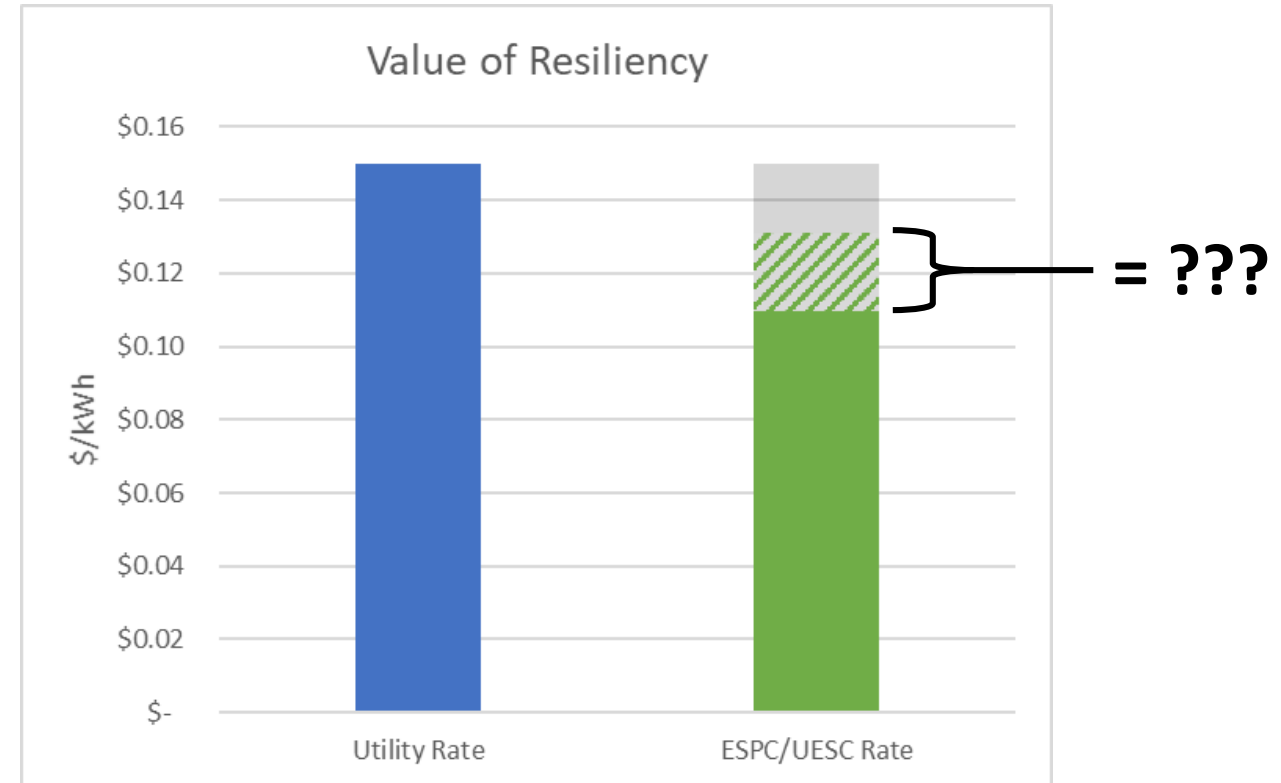
- For the average utility rate payer, the utility rate provides for an appropriate level of resiliency
- Federal agencies with critical loads have above average need for resiliency
- Resiliency costs more **BECAUSE** it provides value

Increase in Value = Increase in Cost/Price

The Need for Defined Value of Resiliency

- Agencies required to save on energy costs – 42 U.S.C. § 8287(a)(2)(B)
 - Existing utility rate provides definitive benchmark for ESPC/UESC
- No benchmark value for energy resiliency
 - Yet, resiliency provided anyway by many ESPC/UESC and occasionally by direct investment

Defining VOR signals how much money is needed beyond energy savings goals in order to meet energy resiliency goals.



The VOR Equation

Private sector – resiliency can be *easily* valued

Example: In 2013 Amazon’s online store went down, costing nearly \$5M in lost sales

$$\text{VOR} = \$5\text{M} / 49 \text{ min}$$

The Value of Resiliency equals the cost of failure over time

$$\text{VOR} = \$ / T$$

The Value of Energy Resiliency equals the cost of an outage over time

Defining the Variables for Federal Agencies

The Time Variable

- The easiest variable to define:

T = Whatever the agency decides

- Agencies set their own standards for just how resilient they need to be
 - How long must they operate independent of the grid

Defining the Variables for Federal Agencies

The Cost Variable

- The cost variable is the most subjective and is the largest barrier to determining the value of resiliency

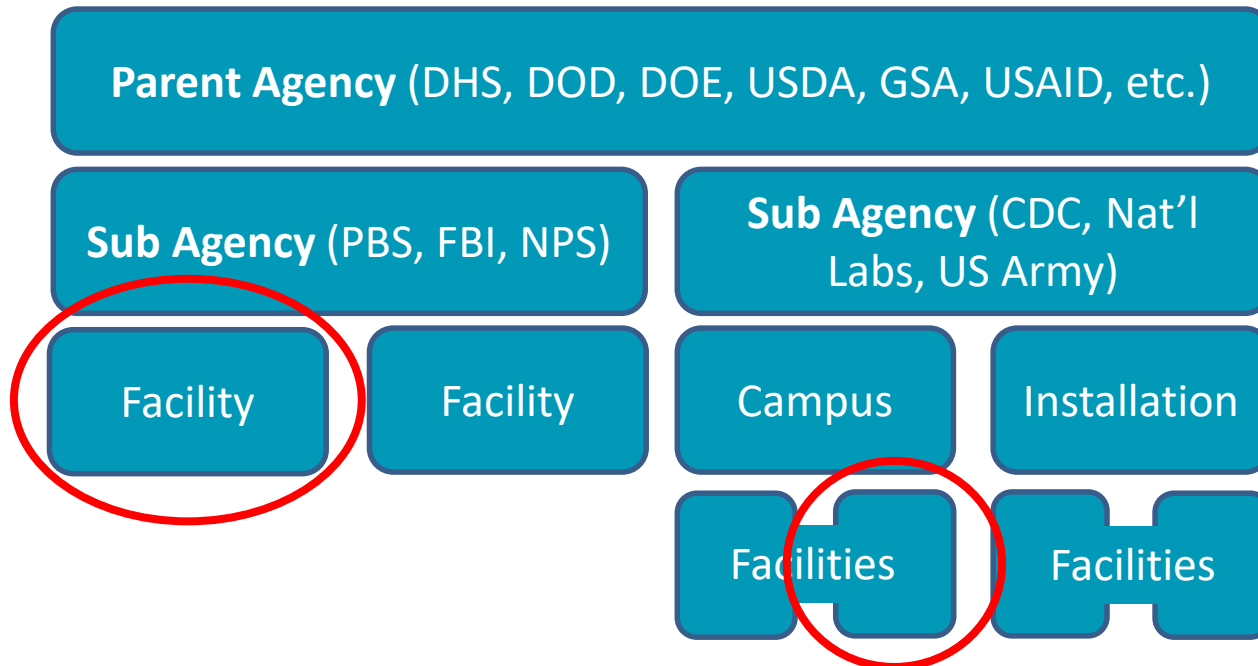
\$ = ????

- Two possible solutions
 - Top down approach
 - Historical audit approach

Defining the Variables for Federal Agencies

Top Down Approach

- **Goal:** define cost of failure/outage at facility level

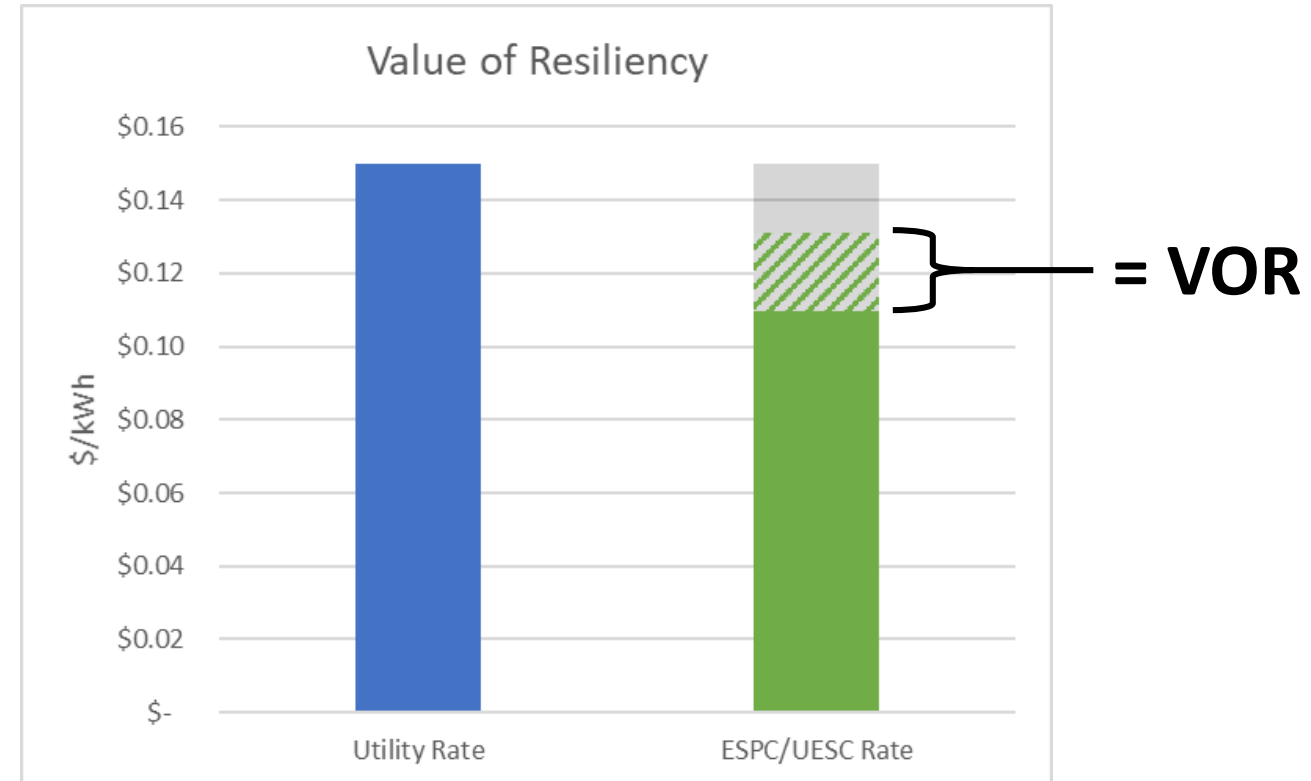


- **Step 1:** Know overall value of an agency in terms of hard \$
 - By GDP, tax revenue, etc.
 - Value of agency translates to cost to US if agency didn't exist
- **Step 2:** Agency leadership distributes value down the chain (weighted according to mission/function criticality)
- **Step 3:** Facility level leadership plans for energy resiliency improvements given a defined value

Defining the Variables for Federal Agencies

Historical Audit Approach

- **Goal:** look to historical projects for VOR and solve for cost variable
- **Step 1:** Gather relevant past data
- **Step 2:** Isolate energy savings measures and find the difference between actual savings delivered with and without resiliency measures
- **Step 3:** Solve for the cost variable



Questions / Discussion

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