



Gap Analysis Compensation – Cost Recovery

FSSTF

August 12, 2019

- **Last Meeting:**
 - Given the credible risks to fuel/energy/resource security that were identified during the June FSSTF meeting, determined which uncertainties are not accounted for in the requirements for the current mechanisms that exist today
- **Today:**
 - Given the credible risks to fuel/energy/resource security that were identified, determine if any gaps exist in the compensation in the form of cost-recovery available for the current mechanisms to mitigate those risks
- **Next Meeting:**
 - Given the credible risks to fuel/energy/resource security that were identified, determine if any gaps exist in the incentives provided by the compensation available for the current mechanisms to mitigate those risks



Relevant Risks Identified at June FSSTF Meeting

| Relevant Risks | |
|--|--|
| Long Duration Cold Snap Short Duration Cold Snap Natural Gas Pipeline Disruptions | |
| Solar Intermittency Wind Intermittency | Renewable Intermittency - Related |
| Coal Refueling (Bridge Failure) Coal Refueling (Lock and Dam Failure) Coal Refueling (Rail Failure) Coal Refueling (River Freezing) Coal Unavailability (Coal Quality) Natural Gas Unavailability Non-Firm Units Oil Refueling (Oil Terminal) Oil Refueling (Truck Restrictions) Nuclear Regulatory Shutdown (Fuel Related) Nuclear Regulatory Shutdown (Non-Fuel Related) Nuclear Unavailability (High Winds) Hydro Unavailability (Freezing Rivers) River Freezing (Cooling Water Impacts) Ice Storm (Transportation Impacts) | Forced Outages - Related |

For ease of exposition in the upcoming slides, some of the Relevant Risks are grouped in two categories: Renewable Intermittency and Forced Outages.

| Long Duration Cold Snap | Short Duration Cold Snap | NG Pipeline Disruption | Renewable Intermittency RR | Forced Outage RR |
|---|--------------------------|------------------------|----------------------------|--|
| <p>Allowable costs included in Avoidable Cost Rate (ACR): Fuel Availability Expenses, Carrying Charges, Capacity Performance Quantifiable Risk, and Project Investment Recovery.</p> | | | | |
| | | | | <p>Ability to recover capital costs to reduce forced outage rates.</p> |

- Majority of generation resources are not offering in unit specific ACRs – thus no specific information on fuel availability expenses
- From the SOM report, for the 21/22 BRA:
 - 84.2% of Generation Resources used the default offer cap
 - 11.4% of Generation Resources offered in as price takers
 - <1% submitted a unit specific ACR

| Long Duration Cold Snap | Short Duration Cold Snap | NG Pipeline Disruption | Renewable Intermittency RR | Forced Outage RR |
|--------------------------------|---------------------------------|-------------------------------|-----------------------------------|-------------------------|
|--------------------------------|---------------------------------|-------------------------------|-----------------------------------|-------------------------|

If a unit runs, is able to recover short-run marginal cost.

Allowable costs include:

- Fuel
- Emissions
- Variable Operating and Maintenance (costs directly related to electrical production)

| Long Duration Cold Snap | Short Duration Cold Snap | NG Pipeline Disruption | Renewable Intermittency RR | Forced Outage RR |
|-------------------------|--------------------------|------------------------|----------------------------|------------------|
|-------------------------|--------------------------|------------------------|----------------------------|------------------|

If a unit clears and there is a non-zero reserve price, is able to recover short-run marginal cost.

Allowable costs include:

- Fuel
- Emissions
- Variable Operating and Maintenance (costs directly related to electrical production)

Additional allowable costs for Synchronized Reserves include costs associated with operating a unit in condensing mode or for altering the output of a unit at the request of PJM to provide reserves.

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|-------------------------|--------------------------|------------------------|----------------------------|------------------|
|-------------------------|--------------------------|------------------------|----------------------------|------------------|

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If a unit is placed on regulation, allowable costs include:

- Fuel cost increase
- Variable Operating and Maintenance cost increases to provide regulation
- Margin Risk Adder

| Long Duration Cold Snap | Short Duration Cold Snap | NG Pipeline Disruption | Renewable Intermittency RR | Forced Outage RR |
|-------------------------|--------------------------|------------------------|----------------------------|------------------|
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If PJM requests a Resource Limited unit to operate differently than what was accepted in the DA Market, then this unit would be paid its lost opportunity cost for the accepted hours that it was not run.

| Long Duration Cold Snap | Short Duration Cold Snap | NG Pipeline Disruption | Renewable Intermittency RR | Forced Outage RR |
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Recovery of switching costs for units that switch following a PJM operating instruction is currently under discussion with stakeholders.

| Long Duration Cold Snap | Short Duration Cold Snap | NG Pipeline Disruption | Renewable Intermittency RR | Forced Outage RR |
|--|---|-----------------------------------|---|-----------------------------|
| Revenue requirement of system enhancement. | | | | |

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Cost Recovery Rates:

Revenue requirements for Black Start Service may include the following, where applicable: NERC CIP Capital Costs, fixed black start unit costs, variable black start costs, training expenses, fuel storage costs for liquefied natural gas, propane or oil and an incentive factor.

| | Long Duration Cold Snap | Short Duration Cold Snap | NG Pipeline Disruption | Renewable Intermittency RR | Forced Outage RR |
|--------------------------------|--|--------------------------|------------------------|----------------------------|------------------|
| Voltage Reduction | Generally, no direct method for cost-recovery. | | | | |
| Gas/Electric Coordination | | | | | |
| Emergency Operating Procedures | | | | | |