Network Integration Transmission (NT) Service – Redispatch

February 12, 2014

Meeting Agenda

- Introduction and Background
- Redispatch 101 Session
- Review Draft Protocols
- Key Dates
- Next Steps

NT Redispatch - Background

- As a condition to receiving NT Service, NT Customers agree to the redispatch of designated Network Resources (DNR) – OATT sections 30.5 and 33.2.
- NT Redispatch is provided during congestion events to avoid curtailment of Firm NT transmission schedules.
    - NT Customers must redispatch their resources when requested by BPA and they will be compensated for providing redispatch.
    - NT Customers are not required to make redispatch available during all hours.
- With rise in non-Federal DNRs, restrictions in operations of FCRPS, BPA is creating processes and procedures to make non-Federal DNRs part of the NT Redispatch program.

NT Redispatch – Tariff Guidance

- Section 30.5 of BPA's Tariff states-
  - "Except as provided in Attachment M, as a condition to receiving Network Integration Transmission Service, the Network Customer agrees to redispatch its Network Resources as requested by the Transmission Provider pursuant to Section 33.2."
- Section 33.2 of BPA's Tariff states –
  - "Except as provided in Attachment M, to the extent the Transmission Provider determines that the reliability of the Transmission System can be maintained by redispatching resources, the Transmission Provider will initiate procedures pursuant to the Network Operating Agreement to redispatch all Network Resources and the Transmission Provider's own resources on a least-cost basis without regard to the ownership of such resources."

Attachment M Redispatch

- Currently, BPA provides NT Redispatch through Attachment M of BPA's Tariff.
  - Attachment M provides for redispatch of the Federal Hydro System (the FCRPS).
- Three types of redispatch:
  - *Discretionary:* requested prior to curtailment of any firm or non-firm PTP schedules or secondary NT schedules to avoid or ameliorate curtailments.
  - *NT Firm:* requested for purpose of maintaining Firm NT transmission schedules, after curtailing non-firm PTP and secondary NT schedules consistent with NERC curtailment priority. Redispatch is provided from the FCRPS to the extent it can be done without violating non-power constraints.
  - *Emergency:* requested upon declaration of a "system emergency" as defined by NERC.

NT Redispatch – Background

- The addition of non-Federal DNRs to the list of resources eligible to provide NT Redispatch, BPA anticipates a potential of up to 800-1000 MW of resources for NT Redispatch purposes.
- The need for NT Redispatch is anticipated to be infrequent.
  - Since 2011, BPA has experienced a total of 14 hours of Firm transmission curtailments.
  - During those 14 hours, BPA requested NT Redispatch through Attachment M (of FCRPS resources).

REDISPATCH 101

NT REDISPATCH – PROTOCOLS

DRAFT

Eligibility Criteria

- Designated Network Resources (DNR) will become part of the NT Redispatch program if they meet the following criteria:
  - *Effectiveness & Dispatchability* – Over a 10-minute period, effectiveness of 3 MW or greater on at least one flowgate (relative to FCRPS resource);
  - *Controllability* – Resource is either staffed or generation levels can be adjusted remotely such that the ramp rates assumed in criteria #1 above are achievable; AND
  - *Cost* – Communication/equipment cost per MW of 10-minute effectiveness is less than the cost per MW of effectiveness of the estimated option premium for bilateral redispatch.

DNR Eligibility Example: Thermal Resource

- DNR: 40 MW CT located in Portland area, can be brought online and ramped to 40 MW in 10 minutes
- Application of Criteria:
  - Effectiveness and Dispatchability: 40 MW ramp in 10 minutes creates over 3 MW of flow on at least one flowgate.
  - Controllability: DNR is staffed 7 days per week from 6am to midnight; remote start capability is available at the utility's dispatch center when plant is not staffed.
  - Cost: DNR already has communication equipment in place to allow redispatch communications with BPA's Dispatch Center.
- DNR meets all criteria and will be part of NT Redispatch program.

Exceptions to Eligibility Criteria

- A DNR can be exempted from participating in the NT Redispatch program if the customer can demonstrate that the resource is non-dispatchable.
- Potential ways of demonstrating non-dispatchability:
  - If the resource is a “base load” DNR.
    - Customer is required to demonstrate that the resource is operated as a “base load” resource (minimal variation in generation level across a 24-hour period), based on historical use.
    - DNR may be exempted from providing INC capacity.
  - Moving the resource (INC or DEC) in any manner outside of its normal operating parameters/curve would damage plant or cause it to violate operating/regulatory restrictions.
    - Demonstrate through provision of generator operating specifications/manual and any other supporting information.

Potential Examples of Exceptions to Eligibility Criteria

- Fishway Unit
  - These are constantly operating at full load, thus not flexible in providing NT Redispatch. Generally, not staffed.
- Co-Gen Unit
  - Generator's contract with industrial customer may prevent it from reducing generation.
  - Moving this unit could cause the loss of load, which may not resolve the original congestion issue.

NT Redispatch – Types of Eligible DNRs

	Long-Term On-System (In BAA) DNR	Long-Term Off-System (out of BAA) DNR	Short-Term DNR	Market Purchase DNR[1]	Variable DNR (Wind, etc)[2]
Eligible for NT Redispatch?	Yes	Yes	Yes – gradual inclusion	Yes	Yes
Providing INC	Yes	Yes	Yes	No	No
Providing DEC	Yes	Yes	Yes	Yes	Yes
Informational Requirements	•INC & DEC cost information •Available INC & DEC capacity and/or minimum and maximum generation levels •Real-time generator output information •Future generation forecast information (if available) •10-minute response capability, limited by ramp rate •Real time response from generator/operator on whether NT Redispatch can be provided when requested				

•[1] These are DNRs that are not associated with an individual resource, but are more akin to arrangements for generation made with Mid-C BAAs, WSPP Schedule C purchases.

•[2] Can be both an off-system or on-system DNR.

NT Redispatch – DNR Informational Requirements

- For DNRs deemed eligible to participate in the NT Redispatch program, the following information will be required:
  - 10-minute response capability (if applicable, at various generation levels);
  - Future generation forecast (if available);
  - Real-time generator output information;
    - BPA currently has the capability to view real-time operation of DNRs located in BPA's Balancing Authority Area (BAA).
  - Forecasted (anticipated) INC and DEC capacity and/or minimum and maximum generation levels.
    - Customer will be required to update this information on a regular basis over a system interface.
  - Forecasted INC and DEC cost information
    - Customer will be required to update this information on a regular basis over a system interface.
  - Real-time response from generator/operator on whether NT Redispatch can be provided from DNR when requested.

NT Redispatch – Compensation Mechanism

•Principle – The customer will be held whole financially for providing NT Redispatch.

	Hydro	Thermal	Variable	Market Purchases
INC Pricing	* Opportunity costs based on the **highest price** of the 24-hour period starting with the hour for which NT Redispatch is requested (based on Powerdex Mid-C index).	• Higher of **opportunity cost** vs. **actual cost.** • Opportunity Cost – Hourly index price of generation for hour in which NT Redispatch requested.	- Not Applicable	- Not Applicable
DEC Pricing	* Opportunity cost based on the **lowest price** of the 24-hour period starting with the hour for which NT Redispatch is requested (based on Powerdex Mid-C index).**	***Method**: **Actual net costs/savings**	***Method**: **Actual net costs/savings**	***Method: Actual net costs/savings**

** If the hydro is in spill condition or negative prices for any hour of the day, the cost is zero.

NT Redispatch – Compensation Mechanism

- Determining *Actual Costs* (if applicable):
  - Cost of fuel
  - Variable operation and maintenance expense
  - Start-up costs
  - Costs of additional operating reserves
  - Costs related to minimum run times
  - *Other* related verifiable and quantifiable costs
- Determining *Actual net costs/savings* (when providing DEC capacity):
  - *Actual Savings* (avoided costs)
    - Avoided fuel costs
    - Other verifiable and quantifiable costs
  - *Actual Costs*
    - Same as those listed above
    - Lost tax credits, renewable credits
    - Liquidated damages, penalties (if applicable)

Compensation Example: Hydro DNR (not in a spill condition)

Scenario:

Hydro Project A has been requested to INC 50 MW at 20 minutes into a delivery hour and Hydro Project B has been asked to DEC 50MW at the same time. Both Hydro Projects are able to respond.

The lowest Mid-C price is $24/MWh in the subsequent 24 hours and the highest Mid-C price is $36/MWh.

- Hydro Project A is paid $1200. 50MWs for 40 minutes at $36/MWh.

- Hydro Project B will pay $800. 50MW for 40 minutes at $24/MWh.

Compensation Example: Hydro DNR (when in spill conditions)

Scenario:

Hydro Project A has been requested to INC 50 MW at 20 minutes into a delivery hour and Hydro Project B has been asked to DEC 50MW at the same time. Both Hydro Projects are able to respond.

The highest Mid-C price is $36/MWh. Since Hydro Project B was in a spill condition the compensation that Hydro Project B pays is $0.

- Hydro Project A is paid $1200. 50MWs for 40 minutes at $36/MWh.

- Hydro Project B will pay $0.

Inc Compensation Example: Thermal DNR

- Thermal DNR from slide 10
- Redispatch Provided: 40 MW INC; notice provided at 10 past the hour; 10 minute to ramp up; Total generation = 30 MWh
- Average heat rate during redispatch: 10,000 mmBTU/kWh
- Cost of natural gas and transportation: $3.85/mmBTU
- Variable O&M: $3/MWh
- Startup cost: $2,000 per start
- Total cost = 30*(10000*3.85/1000+3)+2000 =30*(38.5+3)+2000=$3245
- Cost per MWh = $108.17
- Market price = $40 therefore compensation = actual cost $108.17/MWh for total of $3245

Dec Compensation Example: Thermal DNR

- Thermal DNR from slide 10
- Redispatch: 40 MW DEC; notice provided at 10 past the hour; 10 minute to ramp down; Total avoided generation = 30 MWh
- Average heat rate during redispatch: 10,000 mmBTU/kWh (resource would have been operating at this heat rate had it not been DECed)
- Cost of natural gas and transportation: $3.85/mmBTU
- Variable O&M: $3/MWh
- Startup cost: $2,000 per start
- Total cost (unanticipated start) = $2,000
- Total savings (avoided fuel and O&M) = 30*(10000*3.85/1000+3) = 30*(38.5+3)=$1245
- Net cost = $755
- Cost per MWh = $25.17
- BPA pays customer $25.17/MWh or $755 (net cost from DEC)
- In this case, the cost of the unanticipated start outweighs the benefit of avoided fuel and variable O&M so BPA must reimburse the customer's net costs.

Communicating NT Redispatch Request

- Communicating NT Redispatch to DNRs in BPA's BAA:
  - Signal via *iCRS* System
    - Web-based signal to generator.
    - System is currently installed and available to all generators.
  - Signal via *SCADA/ICCP* System
    - Will be available to generators who currently have the system installed.
- Communicating NT Redispatch to Market Purchase DNRs:
  - Via *curtailment* of e-tag.
    - Market purchase DNRs are eligible to provide DEC capacity, and the transmission e-tag will be curtailed if necessary.
    - Despite the curtailment of e-tag, the NT Customer load will be met by INC from another DNR through NT Redispatch.
- Communicating NT Redispatch to Off-System DNRs (out of BAA):
  - Two potential mechanisms:
    - Via creation of *Emergency E-tags*
      - Effectuates necessary impact to account for interchange between BAAs;
      - Created for NT Redispatch, requires approval of source and sink BAA.
    - Via *Dynamic Signal*
      - Immediate signal to generator

Communicating NT Redispatch Request

- Following a request for NT Redispatch, the customer/generator will be required to respond on whether redispatch can be provided as requested:
  - 5-minutes to respond from time of request.
- Potential reasons for why DNR may not be "*available*" to provide NT Redispatch (among others):
  - *DNR used to make third-party sale.*
    - Sales for less than one year.
  - *Damage to generator*
    - Moving DNR will cause damage to plant.
  - *DNR is shut down for maintenance.*
  - *Lack of water, fuel.*
- Customer must demonstrate supporting documentation, after the fact, for not providing NT Redispatch as requested.

Example – DNR Not Available

- DNR (hydro) designated at 20 MW.
  - Currently, operating at 10 MW.
  - Request to INC by 10 MW
  - Response - DNR response that cannot provide 10 MW Inc (cannot provide NT Redispatch).
    - Not sufficient water available to provide INC.

Key Dates & Next Steps

Key Dates

- February 12 – March 5
  - Customer comment period on draft NT Redispatch protocols.
- March & April 2014
  - Customer Meetings to review updated protocols and FERC filing strategy.
  - An additional customer comment period.
- May 2014
  - Customer Meeting to provide update and any further discussion topics.
- Post June 2014
  - FERC filing of NT Redispatch protocols.
  - Customer meetings and training opportunities regarding implementation of NT Redispatch.

Next Steps

- Customer Comment Period on NT Redispatch Protocols
  - February 12 – March 5
  - Refer to the “Draft – NT Redispatch Protocols” word document
  - Submit comments to Techforum@bpa.gov
- General Customer Meeting – March 2014
  - Review customer comments/input and discuss updated NT Redispatch protocols/procedures.
  - Open another customer comment period.