



## Transmission Services

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Version 6

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### TRANSMISSION SERVICES COMMERCIAL INFRASTRUCTURE FINANCING POLICY AND ANALYSIS (CIFA)

#### Metrics for Allocating Costs and Benefits for Commercial Infrastructure

##### **BACKGROUND**

###### Background

The Commercial Infrastructure Workgroup's "Approach for Allocating Transmission Expansion Costs and Financing Commercial Infrastructure" —generally ~~proposed~~proposes that BPA consider an explicit evaluation of the benefits of network commercial infrastructure projects and that BPA should recover those costs from all transmission customers collectively in the form of general revenue requirements segmented to the network. These benefits are arranged into three categories which include ~~(a)~~:

- a) Reliability - the measurable reliability-related benefits from the project to BPA and to the customers, ~~(b)~~
- b) Future Uses - an allowance for the measurable value of expected future uses through load growth, and ~~(c)~~
- c) Regional Economic Benefits - recognition of the value of other relatively certain and quantifiable economic benefits resulting from the new infrastructure.

~~The proposal further recommends that BPA base the revenue recovery threshold for the remainder of project costs on the Net Present Value (NPV) of long-term commitments (capacity and term length) to pay for service. If this revenue recovery threshold is met, BPA would roll the costs of the new facilities into the revenue requirement and provide transmission service requiring the new facilities at embedded cost rates.~~

This document develops benefit allocation metrics that BPA will apply to network commercial infrastructure projects. In evaluating the benefits of a project according to the metrics, BPA may rely on any previous analysis of the same project or a similar project according to the metrics and the results of that analysis.

##### **OBJECTIVES OF THE METRICS**

###### Metric Objectives

—These metrics define the specific allocations of benefits that BPA will use when evaluating the business case for transmission system expansion for commercial purposes. The objectives of the benefit allocation methodology are to:

- Promote commercial infrastructure while meeting regional consumer needs.
- Limit risk of underutilized assets on BPA's transmission system.
- Limit cost risk shift.
- Ensure equity by matching costs to the products that provide consumer benefits.
- Keep the system safe and reliable.

## Guiding Principles ~~FOR THE EVALUATION METHODOLOGY AND METRICS~~

To meet the above objectives, ~~we~~ BPA adapted and summarized the general principles agreed to by BPA management and the Regional Transmission Issues Steering Committee. These principles guide the development of the methodology through specific metrics for allocating benefits:

1. Principles should be fully transparent and generally agreed upon within the agency and throughout the region.
- ~~1.2.~~ Metrics should be designed to test the agency's risk tolerance for underutilized asset investment and costs shifts.
- ~~2.3.~~ All metrics should be quantifiable, including a realistic distribution of potential outcomes along with stress-tested probabilities.
- ~~3.4.~~ Analysis will include rate impact ranges for different scenarios and 20-year repayment options for long-term financial impacts.
- ~~4.5.~~ In addition to the quantification of the business case, the assessment will include a qualitative description of project benefits (when applicable), a description of why the proposed facilities meet regional needs, and how the costs are aligned with the beneficiaries of the investment.
- ~~5. Principles should be fully transparent and generally agreed upon within the agency and throughout the region.~~
6. The reliability-related benefits from the project to BPA and to the customers should be quantified to the extent possible. The method bases the revenue recovery threshold for the remainder of project costs on the Net Present Value (NPV) of long-term commitments (capacity and term length) to pay for service with the inclusion of regional reliability benefits in the NPV analysis. If this revenue recovery threshold is met, BPA would roll the costs of the new facilities into the revenue requirement and provide transmission service requiring the new facilities at embedded cost rates.

### Reliability-Related Benefits:

Commercial projects may yield reliability-related benefits for the network. Assigning a value to these benefits and allocating the benefits to all customers could reduce the number, requested capacity, and length of signed contracts needed to avoid an incremental cost rate for use of those facilities. Examples of reliability-related benefits include use of the facilities to support quantifiable, highly likely future Network Integration Transmission Service (NT) load growth, increased operational flexibility and increased ability to take outages on other facilities. The value of deferred carrying costs for planned reliability projects that are deferred to a future date, and the full value of reliability projects no longer needed due to construction of the new commercial facilities are also part of reliability-related benefits. These values will be quantified and evaluated on a present value (PV) basis.

### ~~Use of facilities to support NT load growth met by existing NT resources: Use of Facilities to Support NT Load Growth Met by Existing NT Resources~~

This reliability-related benefit stems from the BPA's obligation to plan for and provide transmission service to meet the load growth requirements of existing NT customers. In the context of this benefit, ~~we are~~ BPA is referring to use of the new facilities to provide load service from existing network resources. To avoid double-counting benefits for load service, this use of the facilities will be calculated net of the benefits from other future reliability projects deferred or no longer needed due to construction of the commercial infrastructure.

In both cases above, ~~we are~~ BPA is implicitly assuming that the net present value benefit received from a project built under this program will be greater than the net present value benefits of those projects that were deferred or canceled as a result of building this project.

### METRICS:

Applicable Guidelines: ~~Regional Reliability Guidelines~~

Load Demand Data Sources: ~~BPA Transmission Planning~~

Planning Horizon: 20 years

Quantification: NPV of future NT revenue stream from load growth of existing customers utilizing existing NT resources that require new facilities.

Risk Adjustments: Standard Transmission Services Discount Rate

Risk Adjustments: Standard Transmission Service Discount Rate

**Increased operational flexibility and increased ability to take outages on other facilities:**

Increased Operational Flexibility and Increased Ability to Take Outages on Other Facilities

The value of increased ability to take outages on other facilities is related to the costs savings that can be expected from more efficient use of BPA and contractor field services for performing maintenance and other tasks requiring outages. Decreased use of overtime and reduced set-up time ~~for~~ are elements of this benefit.

Quantification of these benefits and monetizing the value has proven problematic. In addition, these benefits should be minor and would not be a primary driver of any decision. Therefore, in recognition of that difficulty and the minimal benefits they may bring, ~~we recommend~~ BPA recommends these benefits be described in qualitative terms, specific to the proposed facilities.

*Use of Facilities to Support NT Load Growth Met by New Resources*

NT customers will need to acquire new resources some time in the future to meet their load growth. When customers have used up their allocation of the Federal Columbia River Power System, they will have to directly acquire any additional needs by purchasing non-Federal resources, or they will indirectly acquire their needs through BPAP-BPA Power Services Tier 2 resources. Either way, the new resources may have transmission requirements that will become a reliability obligation once the customer has designated new network resources.

There may be overlap between transmission facilities needed for future NT resources and some of the facilities needed for the plan-of-service to meet signed PTP precedent agreements from the Network Open Season. Where there is overlap, the cost of facilities needed for future NT resources would be rolled-in to the network revenue requirement and ~~we~~ BPA would build the facility if the NPV of the PTP revenues cover the cost of accelerating the project in advance of NT needs. For example, if ~~we~~ determine BPA determines that a facility is needed in 2018 for new NT resources, the PTP revenues would need to cover the carrying costs and operation and maintenance of those facilities from the time they are energized until 2018.

**METRICS:**

Applicable Guidelines: OATT Requirements

Load Demand Data Sources: BPA Transmission Planning

Future NT Resources: Jointly determined by BPA and customers in public process

Planning Horizon: 15 years

Quantification: PTP revenues must cover the carrying costs and O&M costs of accelerated NT facilities.

Risk Adjustments: Standard Transmission Services Discount Rate

**Allowance for the Measurable Value of Expected Future Uses:**

In addition to reliability benefits, the methodology takes into account expected future Long-term Point-to Point uses and NT resource additions that are reasonably likely to occur sometime after the initial subscription for use of facilities.

Examples would include generators that have signed interconnection agreements but have not secured power purchase agreements and have not submitted firm transmission service requests prior to the decision to proceed with the construction. There also may be integrated resource plans or regional

power plans that strongly indicate resource development needs in specific areas that match well with the added infrastructure proposed to meet NOS. Load serving utilities may have load growth obligations and Renewable Portfolio Standards (RPS) obligations that would suggest that additional requests for transmission service will occur in the near future. Finally, some transmission contracts may reasonably be expected to exercise roll-over rights and extend service, thus providing expected future revenues to BPA. Since the expected future value has less certainty ~~then than~~ reliability-related benefits, implementation of this methodology requires development of specific criteria to provide reasonable certainty of expected future uses.

Incorporating a well-defined allowance for these expected uses into the threshold determination would further reduce the revenue needed from transmission taken as a result of signed PAPTSA agreements to avoid an incremental cost rate. The workgroup acknowledges that there is some rate risk for all customers in this allowance, but if the assumptions about future uses are reasonable and risk-adjusted then this may result in an acceptable amount of risk that there will be a significant under-recovery resulting in large general rate increases.

Since there are several categories of expected future uses, ~~we BPA~~ will avoid counting the same expected use in more than one instance in the evaluation. Following are categories of expected future uses:

~~—~~  
~~—Categories of Expected Future Uses~~  
~~—~~

- ~~•~~ Rollover of PTP service agreements from initial subscription: Under FERC 890, customers that sign agreements for five years or longer service will have reservation priority to roll-over their service agreements. For determining the present value of signed agreements from the initial subscription resulting from Network Open Season, ~~we BPA~~ will assume that all agreements of five years or longer will exercise reservation priority and will continue to roll-over.

~~—Signed interconnection agreements: Once a generator has signed an interconnection agreement that binds them to fund interconnection facilities on the network, there is likely a very high probability that the generator will begin commercial operation and will need transmission service. If they do not achieve commercial operation, BPA will not repay or provide transmission credits for the funds advanced by the generator for network facilities. However, it is unknown whether or not the generator will take firm transmission service equal to the full rated output of the facility, therefore we propose setting the maximum attributable revenue stream not to exceed 50 percent of the facility's generating capability.~~

~~—METRICS:~~

~~—Data Source:~~

~~—Signed Interconnection Agreements not linked (or assumed to be related to) a specific Transmission Service request. (BPAT GI Queue)~~

- ~~•~~ Transmission Use Assumptions: -Any reliability project that is identified to have a commercial need before the reliability need will need to have revenues to support its carrying costs before the reliability need begins.

~~—New Resources— 50% of interconnection capacity request at PTP rate.~~

- ~~•~~ Non-NT Resource Plans, RRS-RPS Requirements: Oregon and Washington now have Renewable Portfolio Standards<sup>1</sup> that mandate utilities procure specific percentages of power resources from renewable sources in the future. In addition, BPA Power customers will need to select resources to meet Tier II ~~-~~needs for future load growth.

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<sup>1</sup> RPS Data Source: Renewable Northwest Project ([www.rnp.org](http://www.rnp.org)) and the Union of Concerned Scientists ([www.ucsusa.org](http://www.ucsusa.org)).

WECC TEPPC: It is clear that new resources will be needed in the future, but there is some level of uncertainty associated with determining what resources will be needed, where they will be located, and when they will be built. WeBPA also recognizes that not all of these resources will be interconnected to BPA's system. We suggestBPA suggests the WECC TEPPC be used as the reference data source for future resource information.

**METRICS:**

WECC TEPPC: \_\_\_\_\_ The WECC TEPPC database will serve as the primary data source to depict likely future resource scenarios which meet RPS and IRP requirements. ColumbiaColumbia Grid, as the PNW Regional Transmission Planning Forum, could then select the most likely future resource scenario for the PNW. The RPS data and other assumptions about resource location should be considered a secondary data source for reference purposes only.

- \_\_\_\_\_ Columbia Columbia Grid or BPA could then request WECC to perform economic transmission expansion studies "with" and "without" the additional infrastructure. WECC would perform these studies using their security-constrained Optimum Power Flow production costing model (PROMOD IV). Reduced generation production costs for the "with" case versus the "without" case would indicate the extent to which resources are more deliverable to load with the additional facilities.

RPS Data Source: \_\_\_\_\_ Renewable Northwest/ Union of Concerned Scientists for Future Washington and Oregon RPS Requirements not met by current interconnected resources.

*Risk Adjustment Factors for Expected Future Uses (Discount Rate)*

**Nature of the Risk:** -Allocating a portion of the project costs to expected future uses does not present any additional risk of revenue under-recovery for the costs of new commercial facilities. However, it does present some additional risks that misallocation of the project costs would result in some misallocation of the revenue recovery requirement from specific customers requiring the new facilities, resulting in upward pressure on rates for all transmission customers. It is not a question of whether or not weBPA will recover the project costs; it is a question of from whom.

**Magnitude of the Risk:** The magnitude of the risk depends on the overall project costs and the amount of those costs allocated to expected future uses. ~~In the anticipated Open Season, we expect the capital costs of required facilities to be approximately \$600 million. The upward pressure on revenue requirements resulting from these facilities when put into service would be approximately \$65 Million/year or a 10 percent general rate increase (relative to 2009-10 rates) if there are no incremental revenues from use of these facilities. In the case that certain speculative revenues such as those associated with reliability benefits do not materialize, and since there will be some incremental revenue from these facilities due to service taken as a result of the signed PAs, the upward rate pressure will more than likely be less than 5 percent.~~ future uses.

**Adjustment for Risk:** ~~There are several approaches we can consider for risk adjusting revenues from future expected uses. The standard way to adjust for risk on future revenues is by adjusting the discount rate. BPA initially recommended using this methodology by using a 13 percent discount rate for quantifying expected future use benefits.~~

~~In subsequent internal discussion with Risk management and external customers, there was a general lack of support for using two different discount rates to adjust for risk. Since the difference between using a single discount rate and two different discount rates on the overall NPV of the project business case is likely to be small, we suggest a single discount rate equivalent to the standard Transmission Services Risk Adjusted Discount rate of 9 will be at nine percent. BPA will provide sensitivities around the default, rollover, higher capital costs, etc as identified in the risks for each project.~~

**OtherAdditional Regional Economic Benefits:**

**Allowance for other economic benefits**

: The additional transmission capacity may generate other economic benefits and reliability benefits for customers that are not recognized and quantified as discussed above. These economic benefits are

not benefits to just the customers taking service on the new facilities. ~~We include~~BPA includes in these benefits: the value of reduced losses on the system resulting from the addition of the commercial infrastructure, the value of expected reduction in RAS arming and tripping of generators, ~~and~~ the reduced need to seek higher cost short-term power purchases due to reduced impact of outages, and the economic value of access to areas of higher expected average wind velocities that increase wind plant capacity factors and decrease overall cost of wind power to the region.

**METRICS**

**RAS Remedial Action Scheme Arming and Tripping**—: Assessment of the difference of expected number of arming and tripping events with and without the new facilities, times the expected cost of arming and tripping.

Data Sources—: Network Planning and Operations for Difference study

— Customer (possibly WECC) supplied data for arming and tripping costs.

Losses: —Loss difference study from Network Planning. PTP rate times loss difference over 20 years.

**Reduced Impact of Outages**: —This benefit is based on the cost difference between resources redispatched during outages. Construction of facilities reduce the impact of outages and should have resulting economic benefit from the reduced need to obtain short-term purchases to make up for resources made unavailable due to curtailments.

Data Sources—: Pre-Post facility difference study on transfer capability impact of curtailments (Network Planning) and historic curtailment frequency and price differences of markets.

**Access to More Efficient (Wind) Generation**: Construction of facilities may enable more efficient wind and other resources to integrate into the transmission system ~~with a~~ resulting in a lower delivered cost of power from those facilities. This benefit is a collective benefit and should be attributed even when the transmission revenues from these resources are already accounted for as part of the initial subscription or other expected use categories.

Data source: Efficiency and economic benefit cited in BPA/NWPCC Wind Integration Study coupled with WECC TEPPC resource study.

**In Summary**

The details above have been developed into the following assumptions for use in the CIFA:

**Assumptions:**

Applicable Guidelines:	Regional Reliability Guidelines
Load Demand Data Sources:	BPA Transmission Planning
Future NT Resources:	Jointly determined by BPA and customers in public process
Planning Horizon:	20 years
Quantification:	Net Present Value (NPV) of future NT revenue stream from load growth of existing customers utilizing existing NT resources that require new facilities.
Risk Adjustments:	Standard Transmission Services Discount Rate

**For More Information:**

If you have questions or need clarifications on any information included in this document, please submit a query to [techforum@bpa.gov](mailto:techforum@bpa.gov) (subject: CIFA).