

## Benefits Calculation – Package A'

Status Quo: PJM's Market Efficiency process effectuates transmission expansions that are beneficial to address energy and capacity market congestion. Energy and capacity market benefits are computed for 15 years from project in-service date and expressed in net present value. Both energy and capacity market benefits are interpolated for simulation years and extrapolated beyond simulation years. Simulation years for energy benefits include RTEP-4, RTEP, RTEP+3 and RTEP+6; simulation years for capacity benefits include RTEP, RTEP+3 and RTEP+6.

When simulating energy benefits topology will be fixed at RTEP topology; however load, generation and fuel prices are varied. Furthermore, generation expansion is unknown beyond RTEP as well as certainty in load and fuel price growth reduces as time increases. When simulation capacity benefits topology will be fixed at RPM topology, market offers will be based on most recent BRA and CETL will be fixed at RPM CETL. These assumptions can over/under estimate benefits. Also, projects which are likely to have a later in-service date are evaluated using more years of benefits in farther years with higher uncertainty than a simpler project with an earlier in-service date.

In order to inform the project selection process sensitivities can be utilized, however they cannot impact project performance as they are considered informational only.

Package A': This package will address the existing challenges as follows. Energy benefits will be enhanced by introducing changes to 5-4 key components: 1) simulation years, 2) trend ~~extrapolation~~, 3) benefits calculation period, and 4) benefit adjustment for in-service date ~~and 5) Sensitivities~~. Capacity benefits will be discussed during phase 2 of the MEPETF. enhanced by introducing changes to 4 key components: 1) simulation years, 2) benefit calculation period, 3) in service date and 4) benefit adjustment for in-service date.

### Energy Benefits Key Elements:

**1) Simulation Years:** In order to ~~eliminate-mitigate~~ benefit uncertainty driven by topology, generation, load and fuel prices, Package A' recommends simulating benefits for RTEP-2, RTEP, RTEP+2, RTEP+4 years ~~only~~. In all simulated years, generation and transmission topology are set at RTEP year level.

**2) Trend ~~Extrapolation:~~** ~~Trend extrapolation concept can over/under estimate benefits since topology and generation expansion is unknown beyond RTEP year. In order to address this challenge,~~ Package A' recommends fixing benefits beyond RTEP year at RTEP year benefits. establishing a trend based on the above mentioned four simulation years, and using the trend to calculate project benefits for all years starting from project in-service date.- To ensure that the overall project benefits are not driven by extrapolated benefits in farther out years with higher uncertainty, a 10-year B/C ratio will be calculated based on 10 years of annual benefit and 10 years of annual revenue requirement, starting from project in-service date, capped at RTEP+10. Both 10-year and 15-year B/C ratios need to pass a 1.25 threshold.

**3) Benefit Calculation Period:** Given that the benefit calculation beyond RTEP year is uncertain, Package A' will cap annual benefits and annual revenue requirements for all projects at RTEP+~~1510~~, regardless of their in-service date.

**4) Benefit Adjustment for In-Service Date:** It is PJM's goal to address Market Efficiency constraints via transmission solutions by the RTEP year, and to incentivize projects that are designed and proposed to be in service by the RTEP year. Therefore, PJM will adjust energy benefits of projects that are proposed to be in service later than the RTEP year to account for any savings forgone due to later in-service date.

~~**5) Sensitivities:** Market efficiency projects must perform under various sensitivities, otherwise projects will not be robust to address future uncertainties. Package A will require that projects pass the 1.25 B/C ratio thresholds for the Base Case and 1.00 B/C ratio threshold for sensitivities that are defined prior to the opening of the market efficiency window for RTEP consideration. A set of optional sensitivities might also be defined on a project-by-project basis or a global basis during the proposal evaluation period. Optional sensitivity results will be for informational purposes only. Their results may be used in the selection process, but will not be used to pass or fail a project.~~

#### ~~Capacity Benefits Key Elements:~~

~~**1) Simulation Years:** In order to address topology and CETL uncertainties, capacity benefits for Package A will be calculated based on RPM and RTEP simulation years. RPM year capacity benefits will be based on RPM topology and CETL value while RTEP year capacity benefits will be based on RTEP topology and CETL value.~~

~~**2) Benefit Calculation Period:** Given that RPM and RTEP year benefits can be captured accurately, capacity benefits for Package A will be calculated over 2 years by utilizing RPM and RTEP benefits.~~

~~**3) In-Service Date:** It is important that PJM is able to address capacity (RPM) constraints prior to establishing planning parameters for upcoming BRA; otherwise, the capacity market will suffer from split prices for multiple years. Package A requires capacity market constraints to be addressed prior to the RPM year so that planning parameters can be calculated based on transmission expansions. In the event a transmission expansion cannot be attained by the RPM year, Package A will consider capacity market solutions beyond RPM year. However, solutions must occur by the RTEP year given the fact that the capacity benefits cannot be accurately quantified beyond the RTEP year.~~

~~**4) Benefit Adjustment for In-Service Date:** As stated in the previous key element "In-Service Date", it is PJM's goal to address capacity constraints by the RPM year. Therefore, in order to incentivize projects with an in-service date of RPM year or earlier, PJM will adjust capacity benefits of projects that are proposed to be in service later than the RPM year to account for any savings forgone due to later in-service date.~~