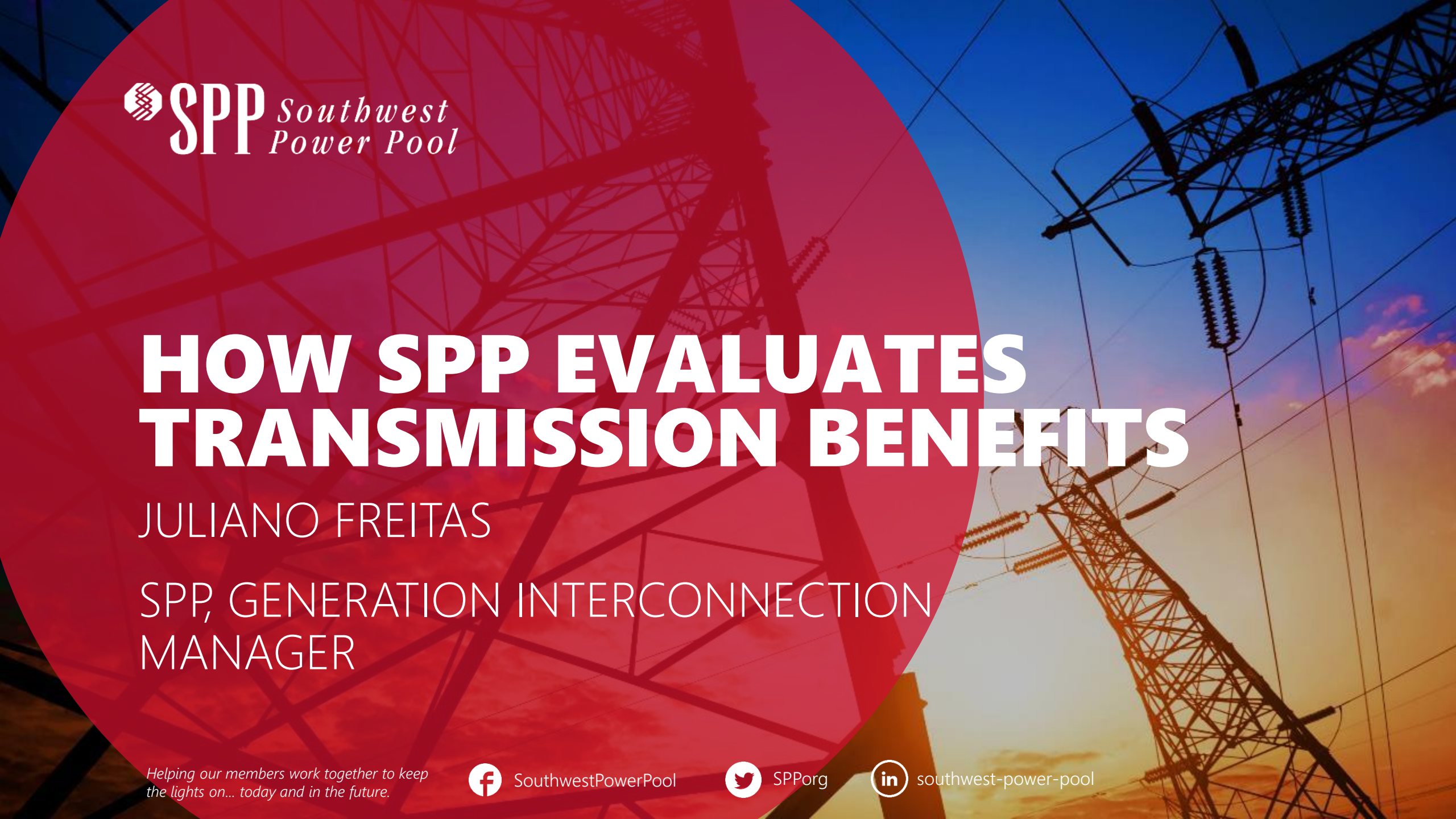


SPP Southwest Power Pool

HOW SPP EVALUATES TRANSMISSION BENEFITS

JULIANO FREITAS

SPP, GENERATION INTERCONNECTION MANAGER

Helping our members work together to keep the lights on... today and in the future.

SouthwestPowerPool SPPorg southwest-power-pool

INTEGRATED TRANSMISSION PLAN (ITP)

- The ITP assessment is a regional planning process built to leverage knowledge of the transmission system's reliability, public policy, operational, and economic needs, as well as compliance, generator interconnection, and transmission service request impacts to develop a cost-effective transmission portfolio over a 10-year planning horizon

INTEGRATED TRANSMISSION PLAN BENEFIT METRICS

- Adjusted Production Cost (APC)*
  - Reduction of Emission Rates and Values (Included in APC)
  - Savings due to Lower Ancillary Service Needs and Production Costs (Included in APC)
- Avoided or Delayed Reliability Projects
- Capacity Cost Savings due to Reduced On-Peak Transmission Losses
- Assumed Benefit of Mandated Reliability Projects
- Public Policy Benefits
- Increased Wheeling Through and Out Revenues
- Marginal Energy Losses Benefit
- Mitigation of Transmission Outage Costs

* Used for project screening and selection

APC SAVINGS CALCULATION

- Used to screen and select projects
- Benefit of firm renewables allocated to zones, non-firm to a separate bucket
- APC Benefit = Base APC – Change APC
- APC = Production Cost ($) + Purchases ($) – Sales ($)
  - All hours summed to compute zonal APC for year
  - All zones summed to compute regional APC for year

BENEFIT COST RATIO CALCULATION

- 1-year
  - By future, by study year
  - $\frac{APC\ Benefit_{SPP,1yr}}{Project\ Cost_{1yr}}$

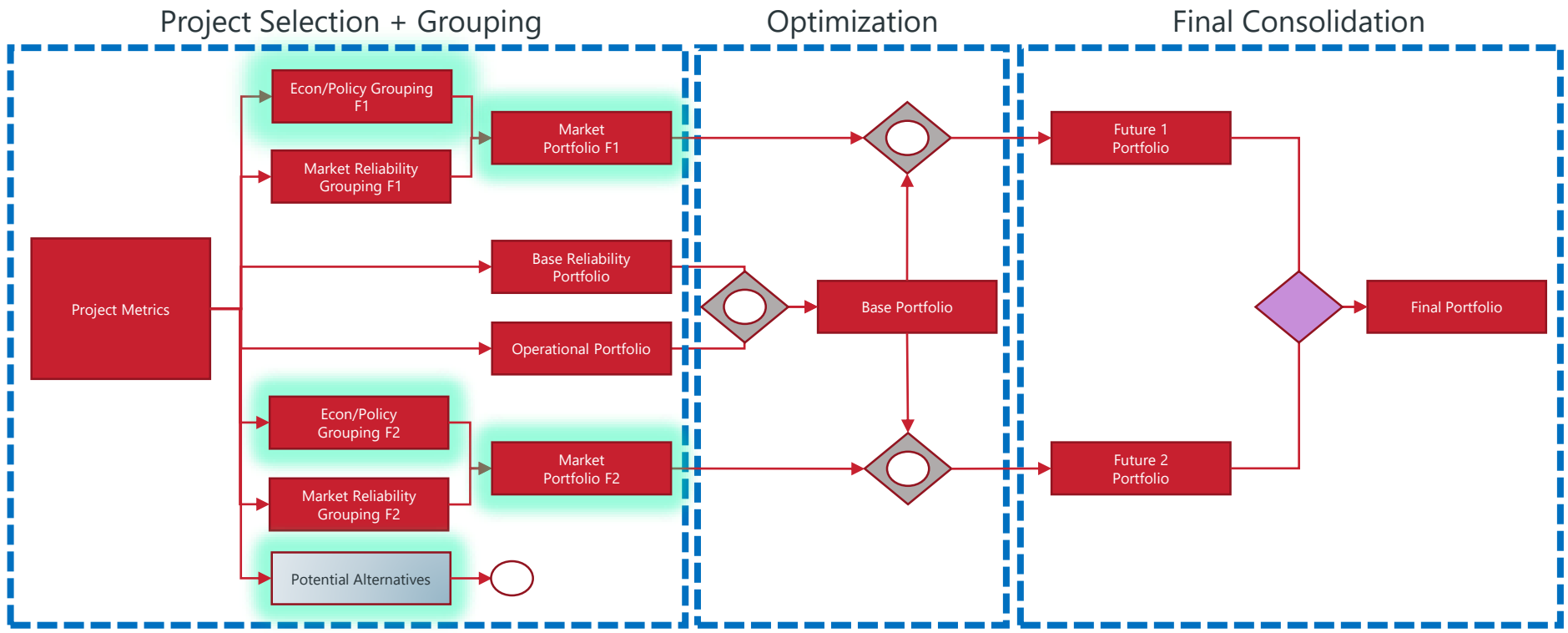
BENEFIT COST RATIO CALCULATION

- 40-year
  - By future
  - $\frac{APC\ Benefit_{SPP,40yrNPV}}{Project\ Cost_{40yrNPV}}$
  - APC benefit for non-study years are interpolated and extrapolated using APC benefit for years 5 and 10

PROJECT SCREENING

- Initial evaluation of each individual proposed solution's performance in mitigating ITP needs
- All solutions (staff and stakeholder-submitted) are included in evaluation
- Goal is to obtain consistent results for all solutions in order to filter and rank projects based on performance later in process
- Feeds directly into project grouping, which considers interactions of solutions with each other
- To be considered for inclusion in an economic grouping, a solution must mitigate congestion on an economic need and have either:
  - 0.5 1-year B/C, or
  - 1.0 40-year B/C

PROJECT SELECTION



Optimization with consideration of potential alternatives

Individual project review including assessment of unmet needs

PORTFOLIO CONSOLIDATION

- Scenarios
  - Same project in each future
  - Competing projects
  - Projects in one future

No.	Consideration	Possible Points	Project Score
1	40-year (1-year) APC benefit-to-cost ratio in selected future	50	1.0 (0.9)
	40-year (1-year) APC benefit-to-cost ratio in opposite future		0.8 (0.7)
	40-year (1-year) APC net benefit in selected future ($M)		N/A
	40-year (1-year) APC net benefit in opposite future ($M)		N/A
2	Congestion relieved in selected future (by need(s), all years)	10	N/A
	Congestion relieved in opposite future (by need(s), all years)	10	N/A
3	Operational congestion costs or reconfiguration ($M/year or hours/year)	10	>0
4	New EHV	7.5	Y/N
5	Mitigate non-thermal issues	7.5	Y/N
6	Long-term viability (*e.g.*, 2013 ITP20) or improved Auction Revenue Right (ARR) feasibility	5	Y/N
	Total Points Possible	**100**	