



# 2013 ITP20

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ESWG

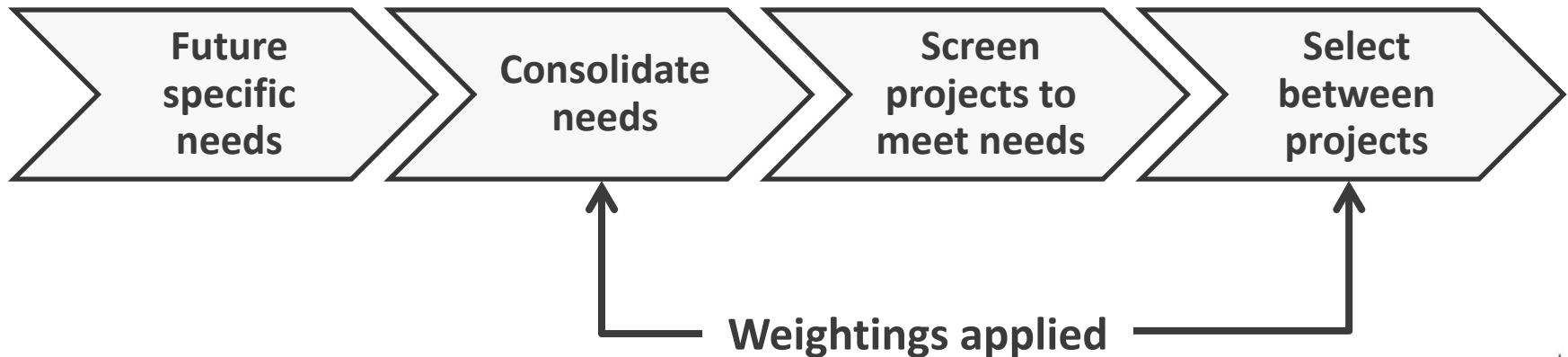
March 8, 2012



# FUTURES WEIGHTING & THRESHOLD

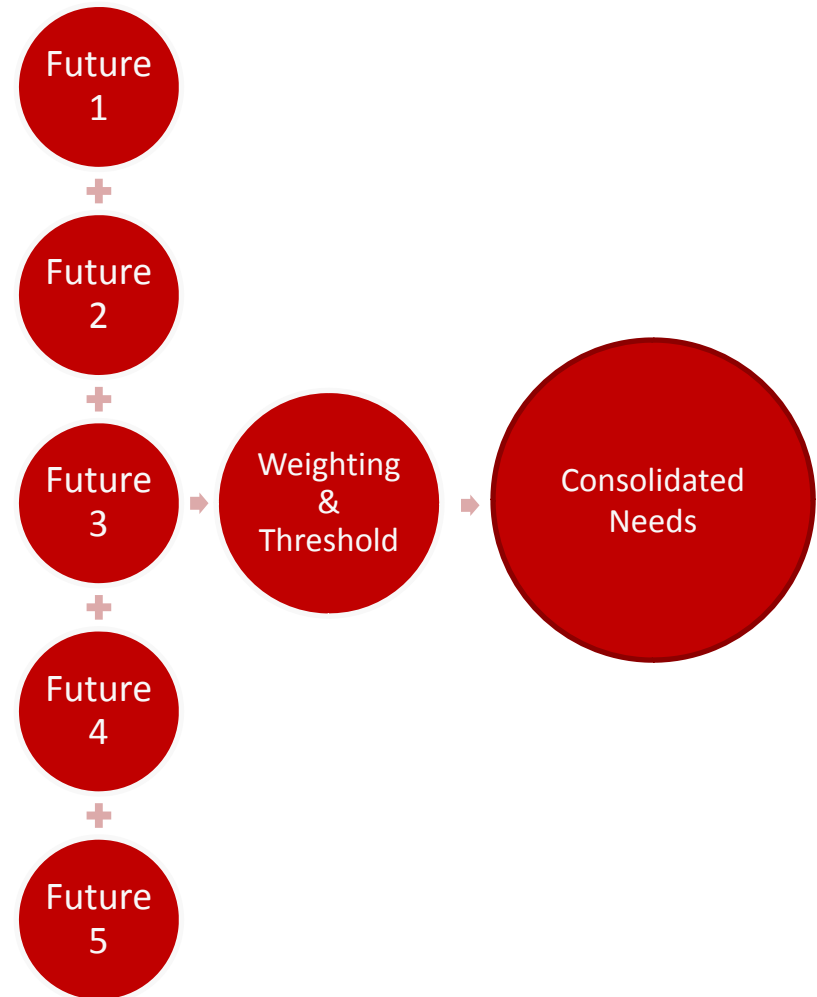
# Futures Weighting – Voting Item

- **Futures Weighting & Threshold**
  - Drive consolidation of needs
  - Assist in selection between similar projects
  - Two proposals for consideration – voting item



# Weighting Focuses Analysis

- **Weightings & threshold drive consolidation of needs**
  - Needs from 5 futures
  - Some needs are not in all futures
  - Weighting and threshold help identify needs for further study
  - Goal: Transmission plan that is flexible for multiple futures



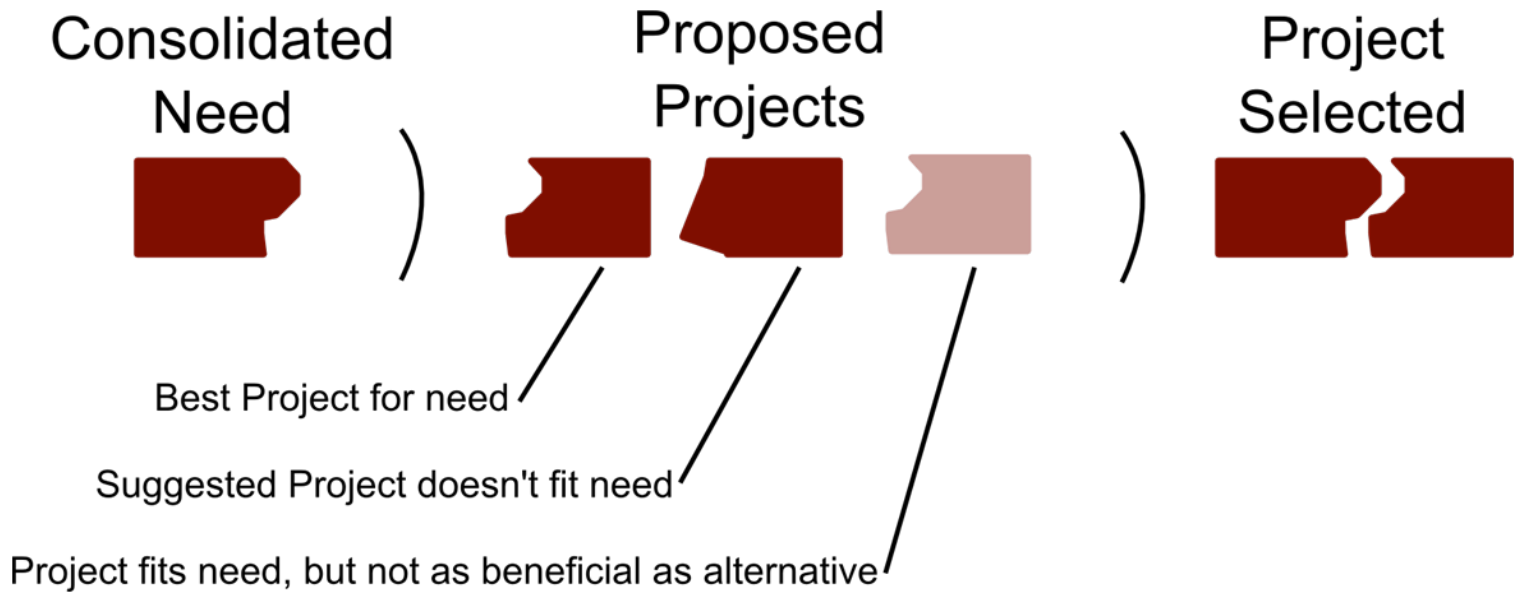
# Example of Need Consolidation

- All reliability, economic, and policy needs will be included here
- Threshold = 60% in this example
- Need A arises in F1 & F2
  - $45\% + 20\% = 65\%$  (Meets 60% threshold)
- Need C arises in F2, F3, & F5
  - $20\% + 10\% + 10\% = 40\%$  (Does not meet 60% threshold)

	Future 1	Future 2	Future 3	Future 4	Future 5	Score	Further Study?
	45%	20%	10%	15%	10%		
Need A	✓	✓				65%	Yes
Need B		✓	✓	✓		45%	No
Need C		✓	✓		✓	40%	No
Need D	✓			✓		60%	Yes

# Weighting Drives Selection Between Projects

- Needs are consolidated across futures
- Projects that meet needs will be identified
- When multiple projects meet a need, projects will be selected based on weighted benefit



# Example of Project Refinement

- Needs shown here have already been consolidated and meet the threshold for further study
- If only one project meets a need, that project will be studied further
  - Project 2 is only project that meets Need D

	Project 1	Project 2	Project 3	Project 4	Project 5	Project 6
Need A				✓		
Need D		✓				
Need E					✓	✓
Need F	✓					
Need G		✓	✓			
Weighted Net Benefit		\$20M	\$40M		\$35M	\$50M
Further Study?	yes	yes	no	yes	no	yes

# Example of Project Refinement

- If multiple projects meet a need, the project with the highest weighted net benefit will be studied further
  - Projects 5 & 6 both meet Need E, but Project 6 has higher weighted net benefit, and is selected for further study

	Project 1	Project 2	Project 3	Project 4	Project 5	Project 6
Need A				✓		
Need D		✓				
Need E					✓	✓
Need F	✓					
Need G		✓	✓			
Weighted Net Benefit		\$20M	\$40M		\$35M	\$50M
Further Study?	yes	yes	no	yes	no	yes



# Calculating Weighted Net Benefit

- This parameter is used only as a tie-breaker for multiple projects that meet the same need
- This parameter accounts for the value of how well a project performs across futures

Weighted net benefit =

$$\begin{aligned} & (F1 \text{ Weight } \%)*(F1 \text{ Benefit} - F1 \text{ Cost}) + \\ & (F2 \text{ Weight } \%)*(F2 \text{ Benefit} - F2 \text{ Cost}) + \\ & (F3 \text{ Weight } \%)*(F3 \text{ Benefit} - F3 \text{ Cost}) + \\ & (F4 \text{ Weight } \%)*(F4 \text{ Benefit} - F4 \text{ Cost}) + \\ & (F5 \text{ Weight } \%)*(F5 \text{ Benefit} - F5 \text{ Cost}) \end{aligned}$$

# Futures Weighting – Option 1

	Future 1	Future 2	Future 3	Future 4	Future 5
Weighting	45%	20%	10%	15%	10%
Threshold = 60%					

- **Principles behind weighting:**
  - Needs must be seen in BAU (F1) to qualify
  - Must be seen in more than just BAU to qualify
  - F2 + F3 shouldn't be unreasonably high; if a need arises in F2, it will probably arise in F3 as well

# Futures Weighting – Option 2

	Future 1	Future 2	Future 3	Future 4	Future 5
Weighting	29%	23%	22%	24%	2%
Threshold = 48%					

- **Principles behind weighting:**
  - **BAU (F1) is primary driver**
  - **Must be seen in more than just BAU to qualify**
  - **Needs seen in three unique future types qualify**
    - **F2+F4+F5, F3+F4+F5, F1+F2+F4**

# Approval – Futures Weighting & Threshold

- Staff recommends ESWG approve the following futures weighting and threshold (Option 1) for consolidation of needs and screening of projects in the 2013 ITP20:

	Future 1	Future 2	Future 3	Future 4	Future 5
Weighting	45%	20%	10%	15%	10%
Threshold = 60%					

# 2013 ITP20 SCOPE

# ITP20 Scope – Voting Item

- Will highlight changes made to scope since February 8 meeting
- Seeking ESWG approval of the scope – Voting Item



# Model Topology

- **Base topology will include:**
  - All projects that have currently have NTC's or NTC-C's
- **Base topology will NOT include:**
  - **2013 ITPNT projects**
    - Projects will not be finalized until January of next year. Are expected to have less impact when looking at EHV solutions for 20-year horizon.
  - **ATP projects**
    - No financial commitment at this time. Will leave these out of the base case and see if the need for them continues to arise.

# Fuel & Emissions Prices

- **Ventyx Spring 2012 Reference Case**
  - Late April/early May release
  - Coal, oil, and uranium
  - CO<sub>2</sub><sup>\*</sup>, SO<sub>2</sub>, NO<sub>x</sub>
- **NYMEX futures with DOE growth rate for years 11-20**
  - Natural gas
  - Coal, oil, and uranium futures may be used for preliminary resource planning calculations until Ventyx case is available

\*CO<sub>2</sub> price will only be used in Future 4



# Capital Costs

- **February 8 ESWG**
  - Discussed MISO-proposed capital costs for Future 5
  - Group consensus that DOE updated capital costs (AEO 2011) should not be used for Futures 1-4
- **Futures 1-4 capital costs will be obtained from resource planning software package**
  - Will be available in mid-April 2012

# Sensitivities

- **Sensitivities pursued**
  - Natural gas price
  - Demand Level
  - Same approach that we used for these sensitivities in the 2012 ITP10
- **Sensitivities no longer proposed**
  - Items already addressed in other stages of the study
    - Low hydro
    - New DC interconnections
  - Drop in allowance cost based on EPA will alter this
    - Emission Tax

# Timeline

<b>ITP20</b>	<b>Group to review/endorse</b>	<b>Start Date</b>	<b>Completion Date</b>
Futures & Scope	ESWG	December 2011	March 2012
Economic Input Assumptions	ESWG	January 2012	May 2012
Policy Survey	ESWG	February 2012	March 2012
Load Forecast Review	ESWG/TWG	February 2012	March 2013
Resource Plans Development & Review	ESWG	March 2012	August 2012
Model Development & Review	ESWG	April 2012	September 2012
Model Finalization	ESWG	September 2012	
Constraint Review	TWG	May 2012	August 2012
Economic Assessment Begins		Early September, 2012	
Project Development Request	ESWG/TWG	November 2012	December 2012
Final Reliability Assessment	TWG	February 2013	February 2013
Stability Assessment	TWG	January 2013	March 2013
Sensitivities Conducted	ESWG	January 2013	March 2013
Final Benefit Metrics Calculations	ESWG	March 2013	March 2013
Review draft report with recommended solutions	ESWG/TWG	March 2013	March 2013
	MOPC	April 2013	
Final report with recommended solutions	ESWG/TWG	May 2013	June 2013
	MOPC	July 2013	
	BOD		

# Approval – Scope

- Staff recommends ESWG approve the 2013 ITP20 scope

# Next Steps

- **Presenting scope for TWG approval on March 20**
- **Policy Survey**
- **Resource Plan**
- **Load Forecast Review**