

CAISO's SB350 Evaluation Plan

Proposed Study Approach

PRESENTED TO:

SB350 CAISO Stakeholder Meeting

PRESENTED BY:

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THE **Brattle** GROUP

SB350 Study Reference Material

Today's meeting is being recorded in its entirety. The recording will be available to stakeholders on the regional energy markets webpage at <http://www.caiso.com/informed/Pages/RegionalEnergyMarket/BenefitsofaRegionalEnergyMarket.aspx>.

This is a service to stakeholders who couldn't join us, or would like to review the proceedings. Materials related to the SB350 study and other regional integration efforts are also available at the link provided above.

SB350 Study Process

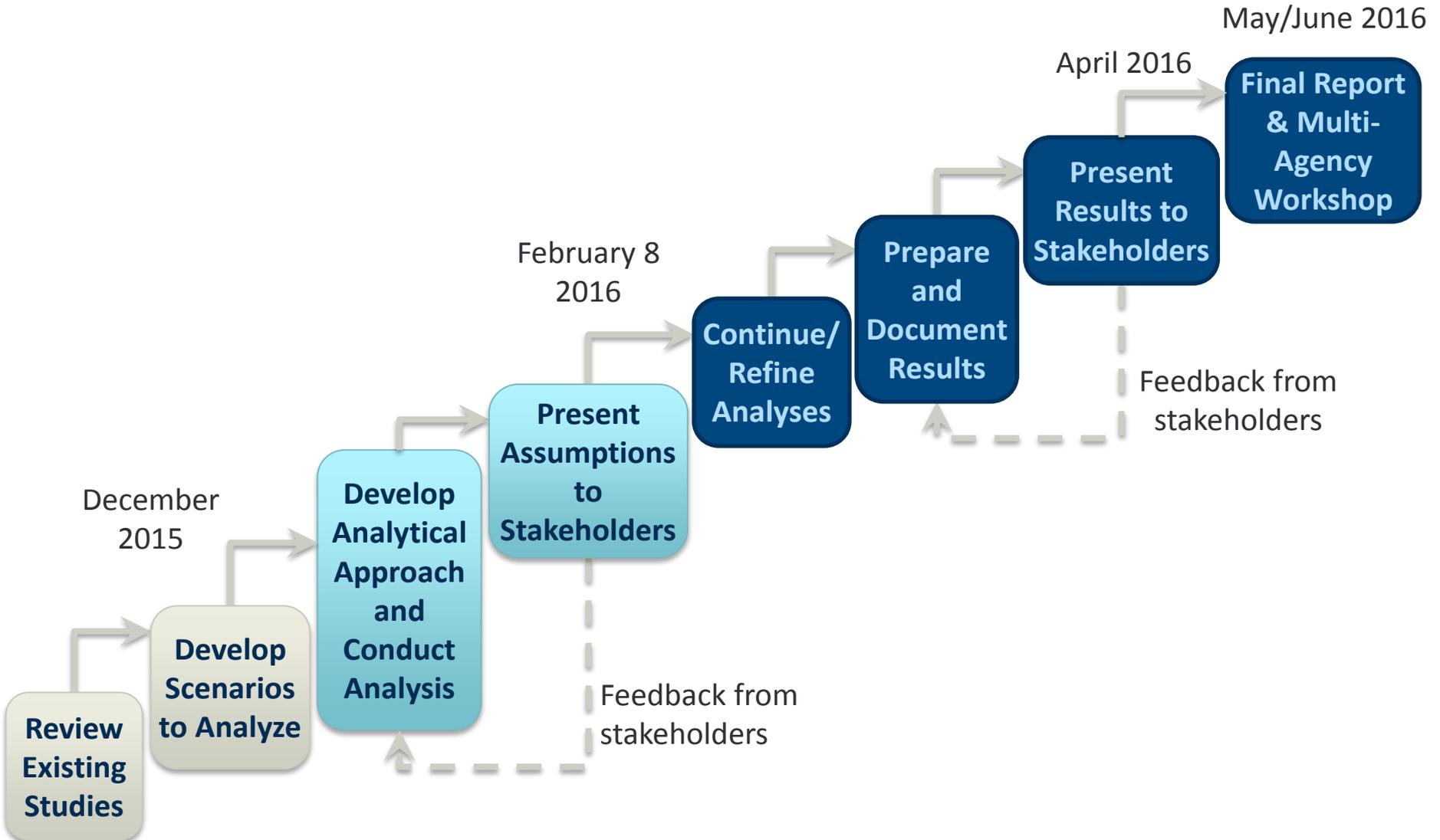


Scope of the SB350 Study

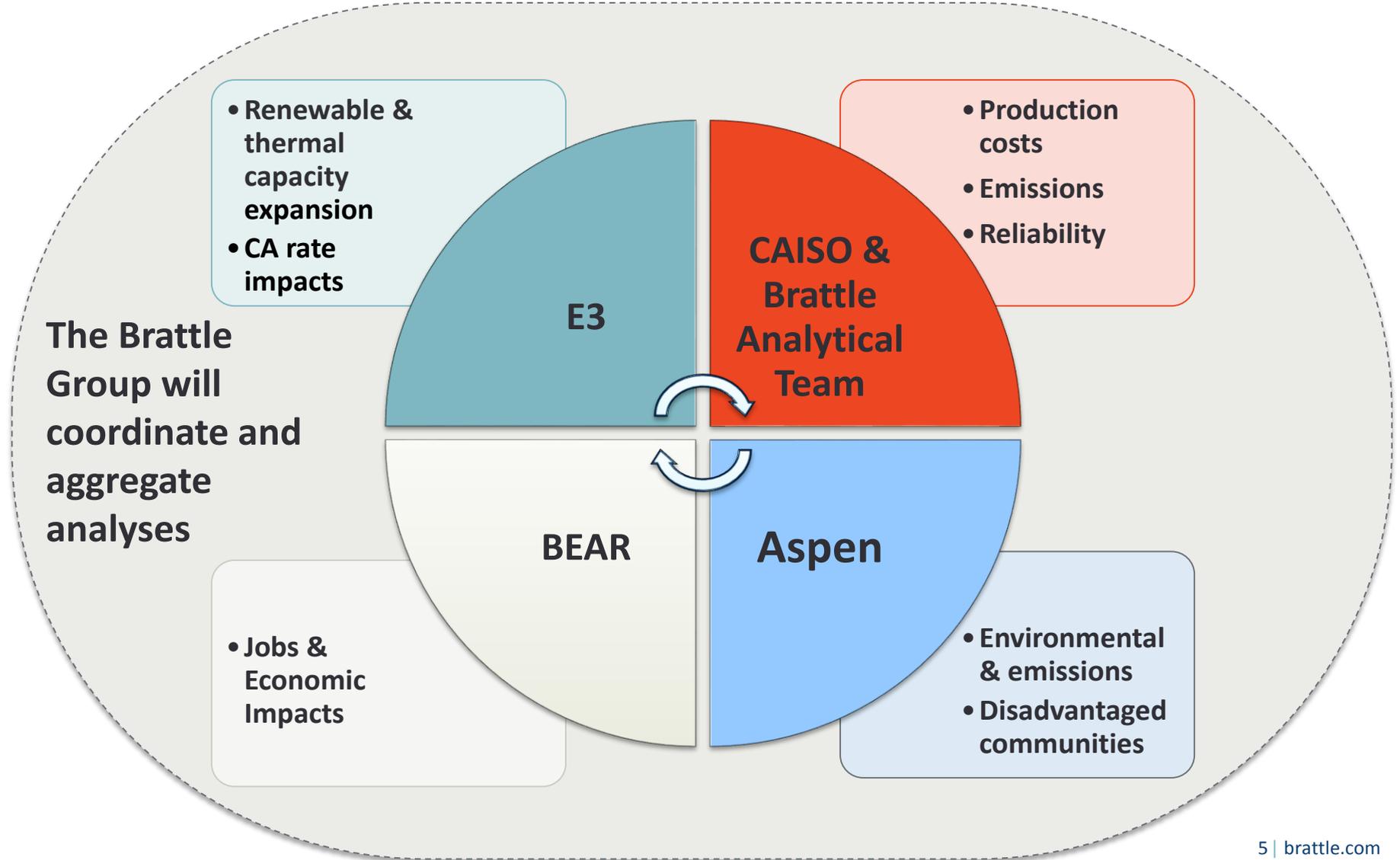
Legislative Requirement:

- 359.5. (a) It is the intent of the Legislature to provide for the transformation of the Independent System Operator into a regional organization ..., and that the transformation should only occur where it is in the best interests of California and its ratepayers.
- The ISO will conduct studies of the impacts of a regional market, including:
 1. Overall benefits to California ratepayers
 2. Creation or retention of jobs and other benefits to the California economy
 3. Environmental impacts in California and elsewhere
 4. Impacts in disadvantaged communities
 5. Emissions of greenhouse gases and other air pollutants
 6. Reliability and integration of renewable energy resources
- The modeling, including all assumptions underlying the modeling, shall be made available for public review.

Process for Completing the Study



Roles of Consultants



Analytical Framework

We plan to estimate the following benefits, in accordance with the requirements:

Benefits Considered	Where	Impact to be Analyzed	Metrics
1. Overall Benefits to Ratepayers			
Operating cost savings	CA, WECC	Production costs and wholesale market prices	Production & Net Purchase Costs (CA); Production Costs (WECC-wide)
Capital (investment) cost savings	CA, WECC	Renewable integration, resource adequacy, resource procurement	Net fixed and capital costs
2. Jobs and economic impact to CA	CA	Infrastructure investment, responses to changes in retail and operating costs	Employment, Gross State Product, incomes, tax revenues
3. Environmental impacts in <u>CA and elsewhere</u>	CA, WECC	Land use/visual resources, biological/ ecology, water supply	Impacts on environmental resources and sensitive areas
4. Impacts in disadvantaged communities	CA	Environmental and economic	Impacts in specific communities
5. GHG and other air pollutants	CA, WECC	Air quality and carbon intensity	Changes in emissions, including in nonattainment areas
6. Reliability and integration of renewable energy resources	CA, WECC	Ability to integrate diverse renewable resources; regional operations and control	Description of improved system monitoring and ability to integrate diverse resources

Leveraging Existing Regional Market Studies

We will also leverage insights from relevant existing studies to inform the analysis and provide bookends to estimated impacts

Study Type	Examples of Studies
<p>Day-2 Market Studies Evaluate benefits of moving from depancaked transmission + energy imbalance market to full Day-2 market</p>	<p>SPP IM Retrospective (2015), SPP IM Prospective (2009)</p>
<p>RTO Participation Studies Evaluate benefits and costs to a utility of joining an existing RTO</p>	<p>PAC-CAISO Integration (2015), WAPA/Basin-SPP (2013), Entergy-MISO (2011)</p>
<p>Post Order 2000 Studies Benefit-cost studies of forming RTOs that followed issuance of FERC Order 2000 in late 1999</p>	<p>LBNL RTO Study Review (2005), RTO West (2002), National RTO Study (2002)</p>
<p>EIM Studies Evaluate the benefits of the Western EIM, or the benefits of a utility joining the EIM</p>	<p>WECC-Wide EIM (2011), APS-EIM (2015), PGE-EIM (2015), NV Energy-EIM (2014), Puget Sound-EIM (2014), PacifiCorp-EIM (2013)</p>
<p>European Market Integration Studies Evaluate the benefits of market integration in the European context</p>	<p>EPRG Integrating European Markets (2015), EU Single Market Study (2013)</p>
<p>WECC Renewable Integration Studies Studying the challenges of higher penetration of renewable resources</p>	<p>NREL/DOE WWSIS 2 & 3, CEERT/NREL Low Carbon Grid Study, CAISO/GE (stability), WGA least-cost integration</p>