Cost-effectiveness Mapping Project

Our mission: To develop a gigantic spreadsheet to compare the methods that all the various demand-side and related resource proceedings have adopted, or plan to adopt, to estimate the costs and benefits of the activities approved in those proceedings.

July 30, 2015 Workshop

R.14-10-003: Order Instituting Rulemaking to Create a Consistent Regulatory Framework for the Guidance, Planning, and Evaluation of Integrated Demand Side Resource Programs

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Cost-effectiveness Mapping Project Spreadsheet

- Proceeding timing and needs
- Cost-effectiveness tests used by each proceeding/resource
- Cost-effectiveness cost and benefit inputs used by each proceeding/resource
- Issues related to cost-effectiveness that have been discussed in each proceeding/resource

Red text indicates the name of the spreadsheet tab

Mapping Project Results: Similarities

- Use of Standard Practice Manual (SPM) tests
- Use of E3 Avoided Cost calculator to determine benefits
- Staff-directed consultant studies determine and/or verify energy and capacity reductions

The *Standard Practice Manual* (SPM)

- Developed to measure the cost-effectiveness of Energy Efficiency programs
- Use four tests to measure cost-effectiveness from four perspectives:
  - *Utility + Participant* The Total Resource Cost (TRC) test

    The TRC measures all "investors," Utility + Participant, not all of society
  - *Program Admin.*: The Program Administrator (PAC) test
  - *Ratepayers*: The Ratepayer Impact Measure (RIM) test
  - *Participant*: The Participant Test
- The SPM also describes the "Societal Cost Test," a variant of the TRC that includes externalities and uses a social discount rate. This has been proposed by ED staff but not adopted by the CPUC.

Avoided Cost Calculator

Calculates 6 types of avoided costs:

- (Generation) Capacity
- Energy

- Transmission & Distribution Capacity (T&D)

- Ancillary Services

- Renewable Portfolio Standard
- Greenhouse Gas (GHG)

Mapping Project Results: Differences

- Reporting requirements and tools
- Different approach to NEBs
- Different version of E3 avoided cost calculator
- Different avoided cost estimation methods
- Different methods to estimate other inputs

Mapping Project Results: Weaknesses

- Limited relationship to actual system conditions and locations
- Focus on measures and programs
- Resource-specific
- Lack of uncertainty analysis
- Marginal generation unit may be outdated/not reflect state policy

Recommendation: 4 Phases of Improvements

1. Improve existing framework

   Goal: consistent measurements across resources, time

2. Improved relationship to actual system conditions, in coordination with Distribution Resources Plan (DRP)

   Goal: meet local needs, make sure DERs provide and give value

3. Improved models which more accurately reflect state policy and goals

   Goal: align cost-effectiveness with GHG and other goals and improve accuracy

4. Expand to and coordinate with supply side to create a VALUATION framework

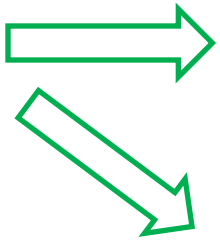
   Goal: Create a level playing field for all resources

Phase 1: Improve existing framework

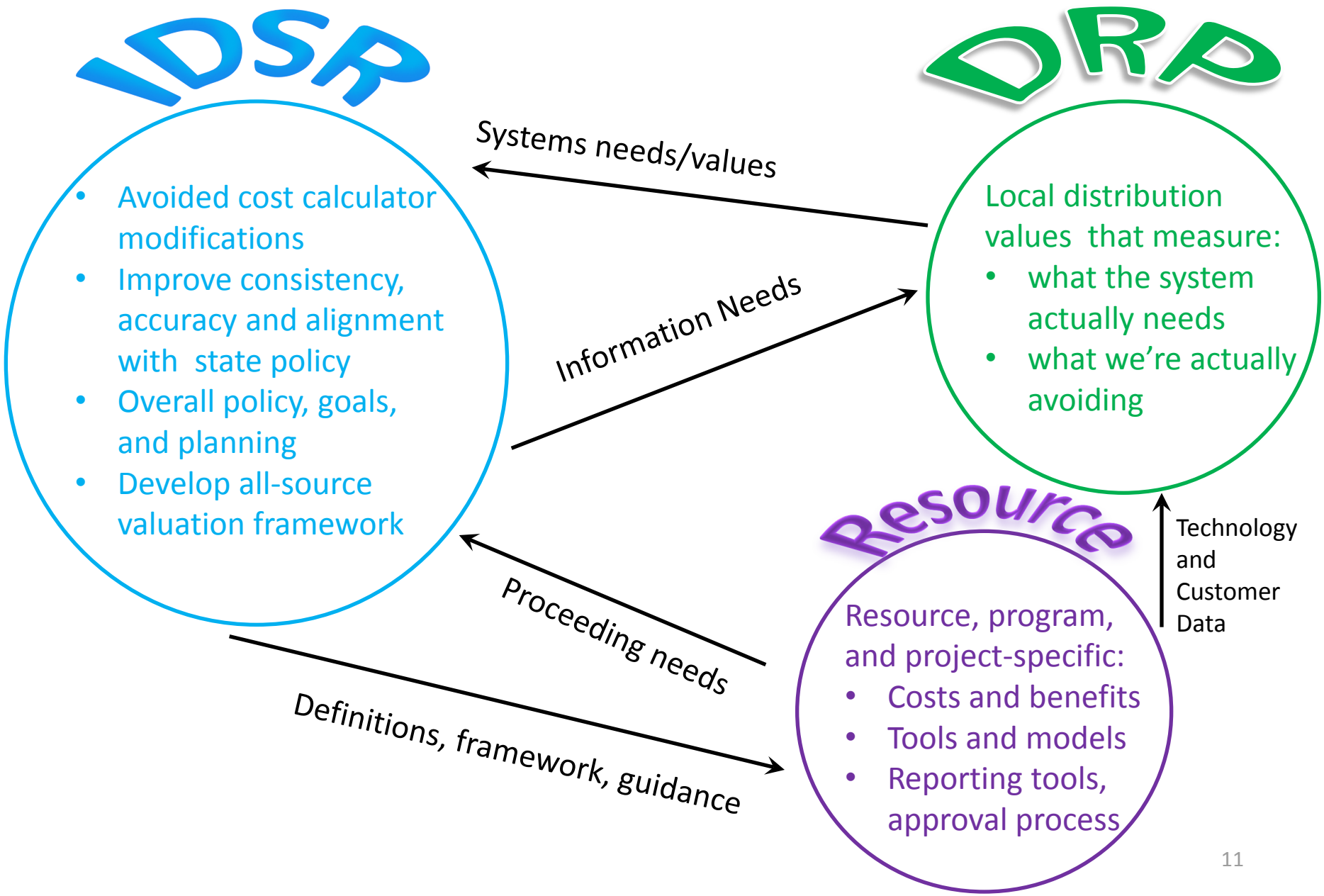
Existing		Proposed in Scope for IDSR
• Different avoided cost calculator version, inputs	⇨	• Regular data inputs, as part of staff-initiated Resolution process
• Different Resource Balance Years, unclear policy on long/short term costs	⇨	• Establish policy and provide regular RBY update, if needed
• Inconsistent and undefined allocation /dispatchability methods	⇨	• Consistent allocation / dispatchability method, updated as needed
• Different reporting requirements and tools, not always current	⇨	• Oversight of reporting requirements and tools, updated as needed
• Different approval thresholds and use of results	⇨	• More guidance on application of cost-effectiveness tests
• Inconsistent calculation of other inputs (participant costs, EUL, admin costs)	⇨	• Guidelines and definitions for all costs and benefits

Avoided Costs

Phase 2: Improved relationship to actual system conditions, in coordination with DRP

Existing		Proposed in Scope for IDSR
• Most inputs based on state or utility-wide averages		• Adopt local values from DRP proceeding as available • Base inputs on actual system conditions
• Resource-specific (e.g., EE, DR, solar)		• Incorporate interactive and complimentary impact of integrated activities
• Focus on programs and measures		• Focus on technology, customer, and system attributes

Possible flow of information related to cost-effectiveness /valuation



Phase 3: Improved models which more accurately reflect state policy and goals

Existing		Proposed in Scope for IDSR
• Sensitivity analysis done in some proceedings.	⇨	• Incorporate uncertainty into cost and benefit estimations by using stochastic models.
• Inconsistent treatment of environmental and other non-energy impacts.	⇨	• Add societal test to include non-energy and other (i.e., market, flexibility & reliability) impacts.
• Avoided costs based on not building combined cycle and combustion turbines.	⇨	• Re-examine how we define the marginal generation unit: what do we really want to avoid?

One example of a societal test: ED Staff-proposed Social Cost Test (SCT)

2013 Staff Proposal:

- Not adopted by the CPUC
- Provided as an example
- Similar Social Cost Test has been used in some DG studies.

SCT is the TRC with 3 changes:

- Social discount rate
- Environmental Health benefits
- Avoided GHG costs (above and beyond the forecast carbon allowance price of CA's cap and trade program)

Phase 4: Expand to and coordinate with supply side to create a VALUATION framework

Existing

Resource-specific cost-effectiveness framework used to determine:

- Whether a measure, program or portfolio is reasonably likely to have greater benefits than costs
- How a measure or program compares with other, similar measures and programs

Proposed in Scope for IDSR

Valuation framework used to determine:

- Whether any resource is reasonably likely to have greater benefits than costs
- How a project, measure, program, or resource compares with all others

The ultimate goal: (post-OIR)

Cost-effectiveness framework can become a ***valuation*** tool

- What benefits can a resource, program, technology provide at what costs?
- Strictly financial, *or* with GHG, health, reliability, flexibility, or other inputs
- When a consistent framework is applied, we can value anything:

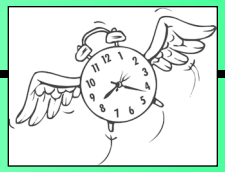
40 MW contract flexible natural gas generation, fast start up, San Bernardino County

55 MW demand response callable by climate zone, May – October weekday peak hours.

85 GWh commercial HVAC efficiency, Bakersfield

2500 electric vehicles providing vehicle-grid integration, Fresno country

3,000 energy efficient homes with 33 MW solar, DR-ready appliances, Climate Zone 10



Improve existing framework

Improved relationship to actual system conditions (with DRP)

Improved models which more accurately reflect state policy and goals

Expand to and coordinate with supply side to create a VALUATION framework