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# The Role of Distributed Generation in an All Source RFO for Meeting Local Capacity Requirements

*Energy Division Workshop on Meeting Resource Needs as Determined in the 2012 LTPP with Preferred Resources*

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# Types of Distributed Generation Addressed in this Proposal

- “BMDG” -- Behind the Meter, Customer Owned (e.g. sized to load commercial or residential rooftop PV)
- “WDG” -- Renewable Wholesale (e.g. RAM or SB 32 projects)
- “CHP” – Combined Heat and Power (e.g. projects subject to the Settlement approved in D.10-12-035 )

# WINNING ATTRIBUTES OF BMDG, WDG & CHP

- Preferred Resources in the CA Loading Order
- Locational Flexibility/Mobility
- Faster to Site and Install
- Multi-site Aggregation
- Modular
- Optionality
- Procurement Flexibility
- Zero or lower GHG emissions
- BMDG and WDG is generally renewable

# BMDG, WDG & CHP CONCERNS

- Uncertainty regarding whether DG will be built (i.e. the “uncommitted” resource).
- At least at the present time, most DG does not have significant flexible operational characteristics such as dispatchability and ramping.
- For BMDG and small WDG, attempting to fill large MW solicitation requests is impractical.

# SOLUTIONS TO CONSIDER

- Method 1 applies only to BMDG because:
  - 1) BMDG capital costs are paid for by owner.
  - 2) BMDG is measured in terms of load reduction.
  - 3) BMDG requires aggregation.
- Method 2 applies generally to WDG & CHP, but with specific refinements for each.
- Addressing the uncertainty of “uncommitted” resources and the differences in performance between conventional resources and DG is central to both Method 1 and 2.

# Method 1 for BMDG

- Aggregate MW quantities of new BMDG in relevant LRA.
- Offer the MW quantity at a fixed per watt price to be paid in one, immediate lump sum, based on the present value of yearly payments equal to the duration of the installation warranty (similar to the CSI EPBB).
- Offer is multiplied by an “Adjustment Factor” to reflect the load reduction impact.
- If the adjusted Offer is less than or equal to the marginal avoided cost of capacity for CT resources offered in the RFO, the BMDG Offer receives a higher ranking than CT resources.
- Winning BMDG Offer guarantees installation of specified MWs in relevant LRA over a certain period of time, and adjusted MWs of CT capacity displaced by winning BMDG Offers are not procured.

## Method 1 BMDG Example

(this is just an example, do not quote me on it!)

Solar Aggregator offers 5 MW of new BMDG in the LA Basin LRA for a one time, up front payment of \$2.5mm. This bid is analyzed as follows:

- Quantity =  $Q = 5000$  kW
- Years =  $Y = 20$  years (i.e. 20 year warranty)
- Avoided CT Cost =  $C = \$144/\text{kW-y}$
- Adjustment Factor =  $A1 = 50\%$  (as derived from the difference between the CAISO LTPP Track 1 Trajectory and Environmentally Constrained modeling results)

Present Value @ 8% discount of  $[Q*Y*C*A] = \$3.5\text{mm}$

Solar Aggregator Offer (\$2.5mm)  $\leq$  \$3.5mm therefore it is ranked higher than CT resources. CT procurement is reduced by  $Q*A1$ , or 2.5MW.

In addition to all the good things on the earlier “winning attributes” slide, Method 1 is a good approach to including BMDG in an All Source RFO because:

- 1)It guarantees incremental BMDG will be built in the LRA, removing uncertainty associated with uncommitted resources.
- 2)No associated debt equivalence or stranded cost risk.
- 3)Allows for aggregation of very small Preferred Resources in appropriate LRA.

# Method 2 for WDG/CHP

- In the relevant LRA:
  - 1) New WDG offers all in price per kWh.
  - 2) New or un-contracted CHP offers capacity price.
- If Offer is less than or equal to the Market Price (MP) plus marginal avoided cost of capacity for CT resources offered in the RFO (\$CT), as adjusted to account for CT production differences between WDG (A2W) or CHP (A2C), Offer receives higher ranking than CT resources.
  - 1) For WDG, MP = most recent RAM or SB 32 Re-MAT clearing price.
  - 2) For CHP, MP = most recent non LCR CHP-only RFO (D.10-12-035)
- Winning WDG or CHP Offer guarantees installation of specified MWs in relevant LRA over a certain period of time, and adjusted MWs of CT capacity displaced by winning WDG/CHP Offers are not procured.

## Method 2 WDG/CHP Example (this is just an example, do not quote me on it!)

- Solar Project offers \$0.10/kWh. MP = \$0.09/kWh from last RAM. Offer is \$0.01/kWh over MP. If  $\$CT * A2W \geq \$0.01/kWh$ , Solar Project Offer is ranked higher than CT resources. CT procurement is reduced by the MW size of the Solar Project Offer as adjusted by A2W.
- CHP offers \$120/kW-y. MP = \$100/kW-y from last non-LCR, CHP only RFO. Offer is \$20/kW-y over MP. If  $\$CT * A2C \geq \$20/kW-y$ , CHP Offer is ranked higher than CT resources. CT procurement is reduced by the MW size of the CHP Offer as adjusted by A2C.

In addition to all the good things on the earlier “winning attributes” slide, Method 2 is a good approach to including WDG and CHP in an All Source RFO because it:

- 1) Guarantees incremental WDG and CHP will be built in the LRA, removing uncertainty associated with uncommitted resources.
- 2) Ensures that offers above the established market (i.e. RAM, Re-MAT or CHP RFO) will only be selected if the increment is less than CT capacity that the WDG or CHP is replacing.
- 3) Utilizes existing Commission programs to help drive WDG and CHP offers to LRA.

## **LAST THOUGHT** **(something to keep in mind)**

Thoughtful calculation of the Adjustment Factors, referred to herein as:

- 1) A1 for BMDG
- 2) A2W for WDG
- 3) A2C for CHP

is very important to address operational differences between CT and DG performance.

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THANK YOU!

~ and ~

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