

Resource Adequacy Workshop: DG Deliverability and Flexible Capacity Procurement

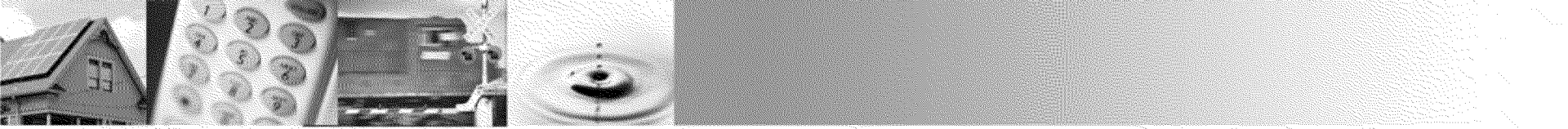
R.11-10-023

January 23, 2012

CPUC Auditorium

Phone - 866 758 1675; Code: 7646128





Introductions

- Copies of the agenda are available in the back of the room
- Restrooms are at the other end of the auditorium, and there is a cafeteria near the main lobby.
- Lets go around the room and introduce ourselves, then go to the phones.





Agenda for today

- Introductions
- 9:00 am to 11:00 am - Overview of CAISO
DG initiative and CPUC policy priorities
(Kristov/Stevens)
 - Discussion
- 11:00 am to 11:15 am - Break





Agenda continued

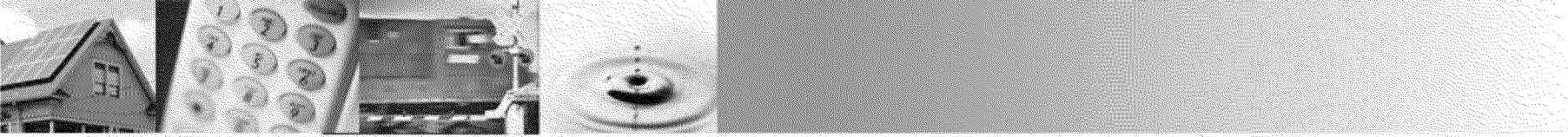
- 11:15 am – 12:15 CAISO proposal regarding Flexibility needs (Meeusen)
- 12:15 pm – 1:15 pm Lunch
- 1:15 pm – 4:30 pm Energy Division proposals and discussion
 - Implementation proposals (Rounding convention, Local RA resources under construction)
 - Energy Division MCC proposal
 - Break
 - Count all option versus differentiated option





Dates, 2013	Phase I proceeding Schedule
Jan 15	Energy Division issues staff proposals including flexibility proposal
Jan 23	Energy Division workshop (today)
Feb 13	R.11-10-023 Party comments filed
Feb 27	R.11-10-023 Party Reply comments filed
March/April	Possible second Energy Division Proposal
Apr	CAISO publishes draft 2014 LCR report
May	CAISO publishes final 2013 LCR Report
May 10	Comments on final 2013 LCR Report filed with Commission
May 17	Reply comments on final 2013 LCR Report filed
May 28	Proposed decision issued by ALJ

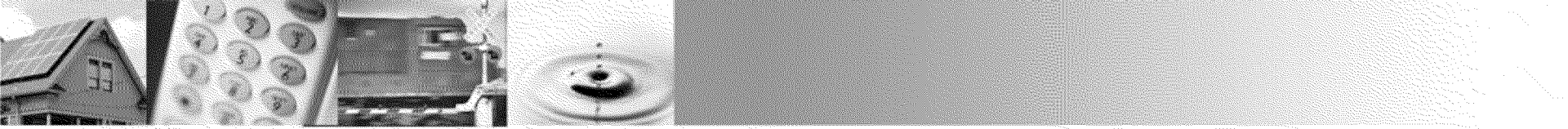




DG proposal

- Brian Stevens presenting

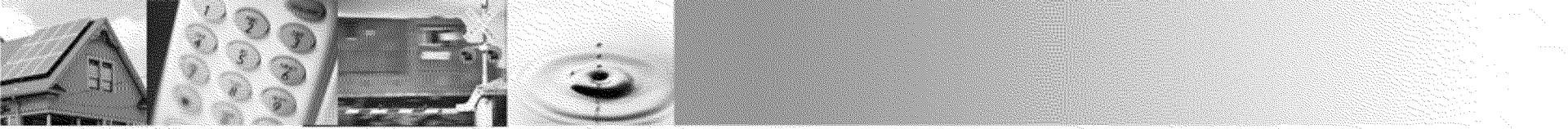




Overview

- The CAISO Resource Adequacy Deliverability for Distributed Generation initiative will offer a new pathway for distributed generation resources to qualify for Resource Adequacy (RA) value.





Objectives

- Determine the amount of DG that will be deliverable without:
 - Additional delivery network upgrades
 - Further deliverability assessments
 - Degrading the deliverability of existing resources or active generation projects in the interconnection queues
- Support California's RPS
- Support the development of DG

Source: CAISO DGD Stakeholder Presentation – April 5, 2012





Objectives

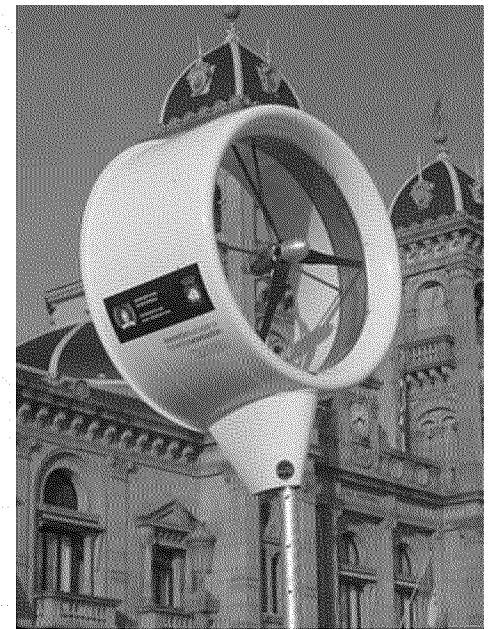
- Approach must apply to both WDAT and non-Net Energy Metered (non-NEM) Rule 21 interconnections
- Ensure consistency with TPP-GIP integration
- Inform developers, LRA/LSE resource planning and procurement processes, and other interested stakeholders of geographical locations where deliverability capacity exists to accommodate additional DG resources

Source: CAISO DGD Stakeholder Presentation – April 5, 2012



CAISO Stakeholder Process

- In the CAISO's tariff filing at FERC (*Docket ER - 12 - 2643 - 000*), the CPUC plays a key role as a Local Regulatory Authority (LRA) in nominating and allocating deliverability status to Load - Serving Entities (LSE) and/or generation resources.





Action at FERC

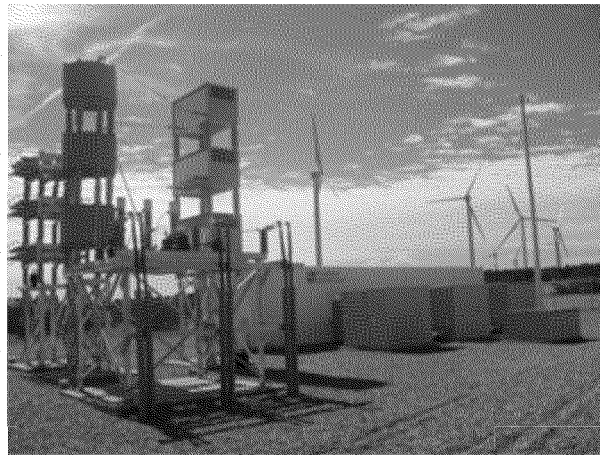
- In an Order issued on 11/16/2012, FERC approved the tariff filing contingent on two modifications:
 - Deliverability status is to be transferred directly to LSEs for allocation to generation resources, and
 - LSEs are ordered to allocate deliverability status available through this new process to resources queued for interconnection on a first - come, first - served basis





Application of RA Program Rules

- Each resource's capacity qualifying for Resource Adequacy Deliverability shall be determined by the NQC.
- There shall be no payment for past RA value provided.





Coordination with procurement

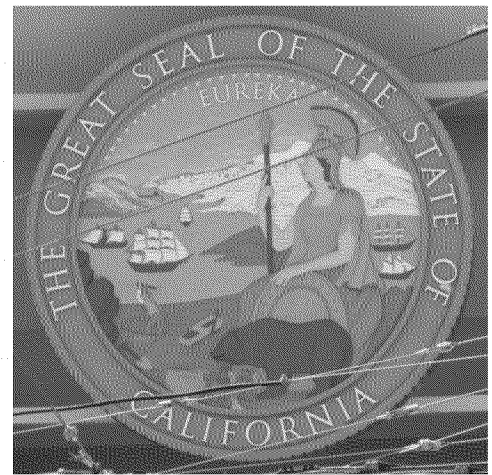
- This new pathway to deliverability extends the possibility that a resource may be energy-only upon execution of a PPA and become fully deliverable at some point during the contract term. This raises implementation questions about how a resource may be compensated for RA value within the rules and intent of each program.





Procurement Programs Impacted Include

- Re-MAT FiT
- Renewable Auction Mechanism (RAM)
- AB 1613 Efficient CHP FiT
- Existing renewable, water/wastewater FiT
- QF < 20 MW
- RPS
 - Could extend beyond IOU service territory



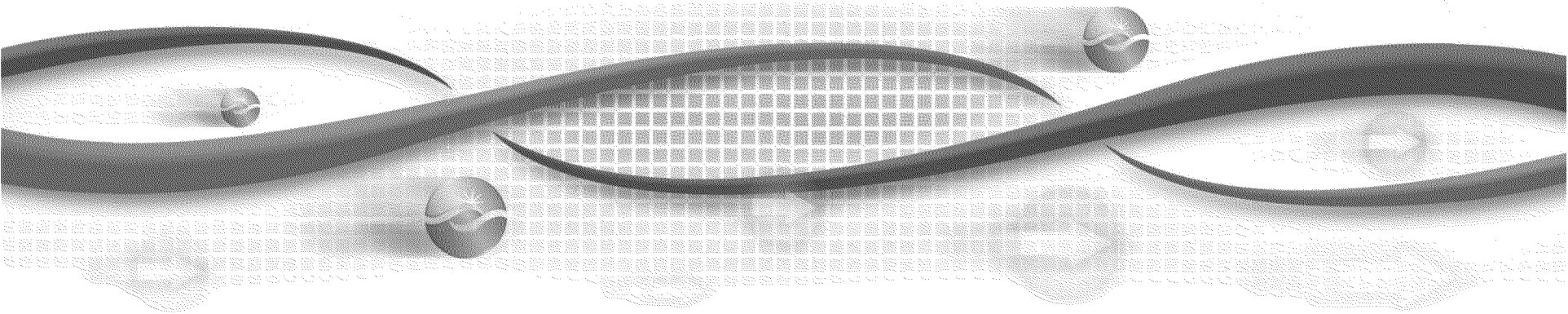


California ISO
Shaping a Renewed Future

Deliverability for Distributed Generation

Possible Approaches for Complying with FERC 11/16/12 Order

Lorenzo Kristov, Market & Infrastructure Policy
CPUC Workshop, January 23, 2013



ISO's DG Deliverability proposal, filed on 9/18/12, had two sequential parts.

1. Annual DG Deliverability study performed by ISO to determine nodal MW quantities of DG resources that can be deliverable for Resource Adequacy purposes
 - Without requiring delivery network upgrades to ISO grid or further deliverability studies
 - Without degrading deliverability status of existing or queued generation projects
 - Available to non-NEM Rule 21 and WDAT resources
2. Apportionment of "Potential DG Deliverability" to local regulatory authorities (LRAs) who oversee procurement
 - LRAs and their LSEs use their apportioned shares to assign deliverability status to specific DG projects

FERC's 11/16/12 Order accepted the proposal but required two changes.

1. ISO must apportion Potential DG Deliverability to LSEs directly, rather than to LRAs
2. FERC-jurisdictional LSEs must assign deliverability status to DG resources on a first-come-first-served (FCFS) basis, subject only to interconnection clustering and operational considerations
 - Order cites open access interconnection principles as basis for FCFS requirement
 - Deliverability status (DS) as a generator attribute is derived from capacity on the ISO grid

ISO compliance filing is due on 2/14/13.

- Apportionment to LSEs instead of LRAs appears straightforward
- Incorporation of FCFS appears to present some alternative approaches, requiring careful evaluation to determine best approach
- Complete and file required changes in time to obtain FERC order to implement the process in 2013 for LSEs to use results to meet 2014 RA requirements
 - ISO's DG deliverability study is now in progress and on track to provide results by mid February

Three conceptual approaches are identified for incorporating FCFS.

1. Establish FCFS order based on queue positions (and/or other criteria) for assigning DS to DG resources, and apportion shares of DGD to LSEs for RA purposes
2. Establish FCFS order based on queue positions (and/or other criteria) for assigning DS to DG resources, and eliminate apportionment to LSEs
3. Adopt MIC model – apportion shares of DGD to LSEs for one-year RA purposes, but do not assign the DS attribute to DG resources

Preferred approach may not fit within compliance and may require a 205 filing.

Approach 1

- Establish FCFS order based on queue positions (and/or other criteria) for assigning DS to DG resources
- Apportion shares of DGD to LSEs for RA purposes

Example of how this might work in practice

1. By mid-February ISO completes DG Deliverability study per original filing and posts results (nodal MW amounts)
2. Each PTO creates FCFS order of DG resources at each node where Potential DGD > 0
 - FCFS may be based only on queue position (combined WDAT & Rule 21), or may include other criteria

Approach 1 – continued

3. PTO assigns DS to GD resources in FCFS order, based on their QC, until each node's MW amount is used up
 - PTO reports results to ISO and posts list of deliverable DG resources by end of March
 - Retention criteria would be applied by PTO (e.g., DG resource must achieve COD within 2 years of initial DS assignment) and may result in withdrawal and reassignment of DS by PTO
4. From April to July ISO apportions shares of DGD to LSEs, following 3-phase nomination process and using load-ratio shares as originally filed
5. When LSEs submit their RA reports, their use of DG would be limited to their apportioned shares

Approach 1 – Observations

- Allows limited discretion to LSEs to select DG resources for RA because DS is assigned in FCFS order
 - Could improve alignment with LSE procurement if FCFS criteria include bilateral contract status
 - Using additional FCFS criteria will be more complicated, both to develop the provisions for filing and to implement
 - Adopted criteria must be consistent with principles of open access interconnection
- Requires PTOs to implement processes to establish nodal FCFS order and assign DS to DG resources
- Limiting LSE use of DGD in their RA plans protects each LSE's load-ratio share and nodal distribution

Approach 1 – Open Questions

- Define criteria and methodology for PTOs to establish FCFS
- Define rules for tie-score situations
- Define retention criteria and reassignment process
- Determine whether and how DS could be assigned to existing DG resources, already operating and not in an interconnection queue.

Approach 2

- Establish FCFS order based on queue positions (and/or other criteria) for assigning DS to DG resources
- Eliminate apportionment to LSEs, once assignment of DS by PTOs determines deliverable DG resources

How this might work in practice

- Essentially the same as Approach 1, but dispenses with apportionment to LSEs
- Once PTOs assign DS to DG resources and post lists, LSEs may obtain RA from any of those resources
- Need to define FCFS provisions & related issues same as for Approach 1

Approach 3

- Adopt MIC model – apportion shares of DGD to LSEs for one-year RA purposes
 - Utilize LSE apportionment process per original filing
 - Apportioned shares represent amount of DG each LSE can count towards RA for the upcoming year
- Do not assign the DS attribute to DG resources
 - DG resources would obtain DS through the interconnection study process (WDAT)
- Because process does not assign DS attribute to DG resources, LSEs do not have to follow FCFS order and have more flexibility in choosing DG resources for RA

Approach 3 – continued

- Does not guarantee that total amount of DGD and LSE shares cannot decrease in the next year
 - Preserving shares from one year to the next may conflict with open-access interconnection principles
- Probably the simplest of 3 approaches to implement
 - Does not require establishing FCFS order, assigning DS to DG resources, or monitoring retention criteria
- LSEs can utilize any combination of WDAT, Rule 21 and DG resources already in operation to meet their RA requirements

Approach 3 example

- Project A is a DG project with QC = 3 MW at Node 1
- DGD study => 8 MW DGD at Node 1 for 2014 RA year
- LSE-X & LSE-Y both serve load at Node 1, their shares of DGD are 6 MW and 2 MW respectively

Scenario 1: Project A had requested FCDS in the WDAT, so 3 MW were reserved for it prior to finding 8 MW DGD

- Case 1. Project A not in operation in 2014; DGD shares of the LSEs are not affected
- Case 2. Project A in operation in 2014 but not contracted for RA; DGD shares of LSEs are not affected; Project A has 3 MW potential RA capacity it can provide
- Case 3. Project A in operation and contracted with LSE-X for 2014; DGD shares of the LSEs are not affected, so LSE-X potentially gets 9 MW of RA from DG at Node 1.

Example – continued

Scenario 2: Next cycle (for 2015 RA) Project B at Node 1 with QC = 2 MW enters the queue, requests FCDS

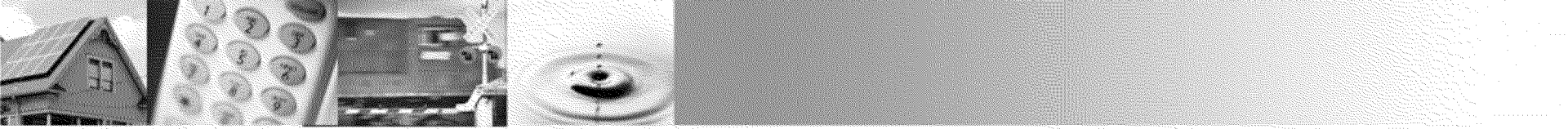
- Option 1. Do not preserve 2014 DGD apportionment
 - DGD study reserves 5 MW for Projects A & B
 - Absent any other grid upgrades, only 6 MW DGD remain for LSEs (4.5 MW LSE-X and 1.5 MW LSE-Y)
- Option 2. Preserve 2014 DGD apportionment to LSEs
 - DGD study reserves 3 MW for Project A and 8 MW from 2014 apportionment (or the amount the LSEs actually used)
 - LSE-X and LSE-Y maintain their 6 MW and 2 MW shares
 - Interconnection study for Project B would identify additional network upgrades for Project B

ISO has requested written comments from stakeholders by 1/25/13

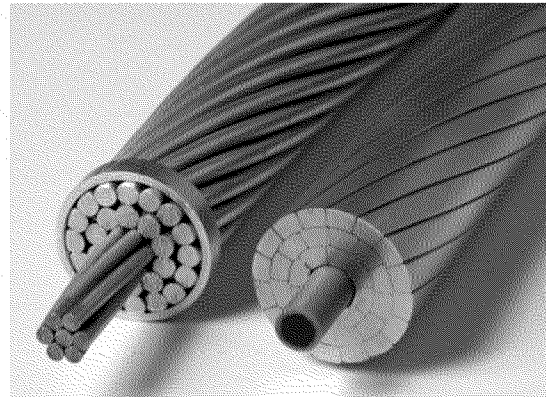
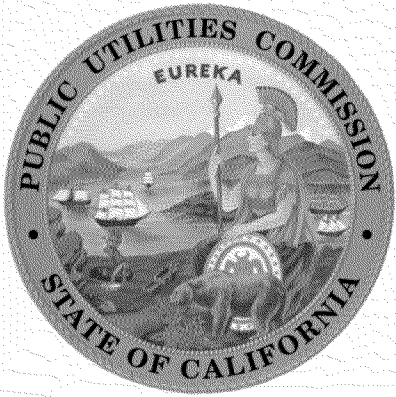
- Submit to DeliverDG@caiso.com

ISO's Jan. 11 Issue Paper is available at:

<http://www.caiso.com/Documents/ResourceAdequacyDeliverability-DistributedGenerationIssuePaper.pdf>



DISCUSSION



Brian Stevens

California Public Utilities Commission

Energy Division, Resource Adequacy and Procurement Oversight

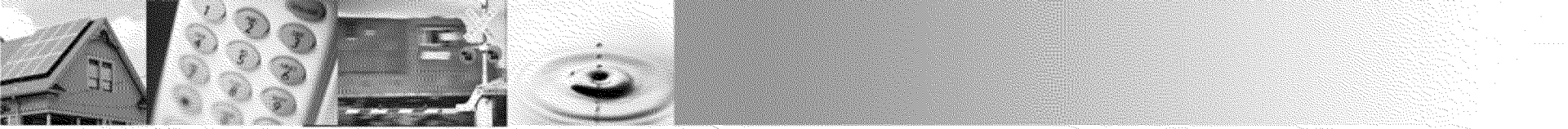




Discussion on the options

- How would each of the three options interact with the CPUC jurisdictional LSEs?
 - Broadly speaking?
 - What concerns of crowding out of the smaller LSEs are there?

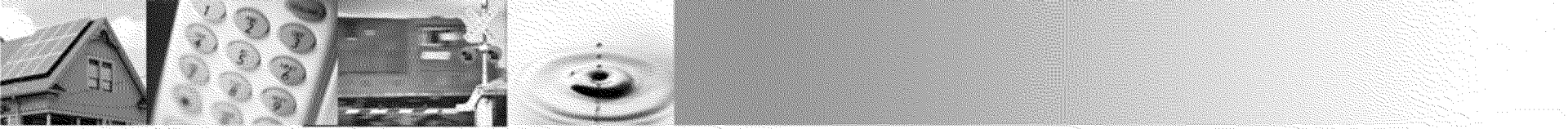




Questions

- How are existing energy only PPAs going to be impacted for generators that obtain this status? Who gets the RA and at what value?



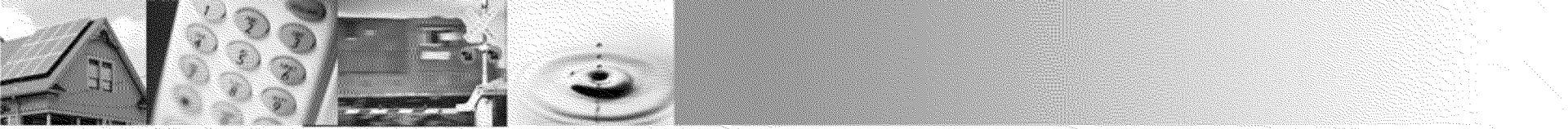


Questions

- Given the open access, technology neutral policy stance at FERC, how do any of the options provide more ability to support preferred resources?

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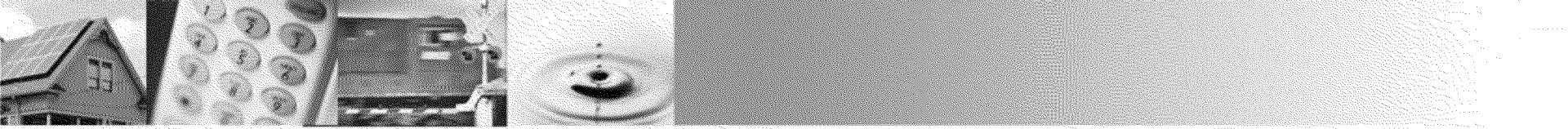




Questions

- What rules around affiliate transactions need to be developed or addressed?

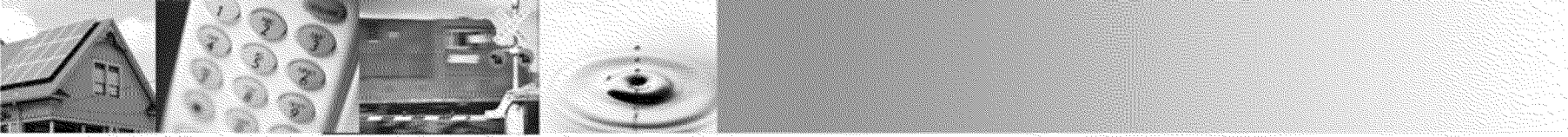




Questions

- What resource adequacy rules that should be changed or developed to better accommodate for DG?

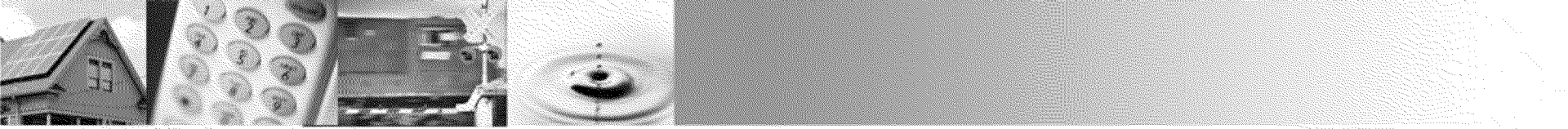




Lunch

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Energy Division RA Implementation Proposals

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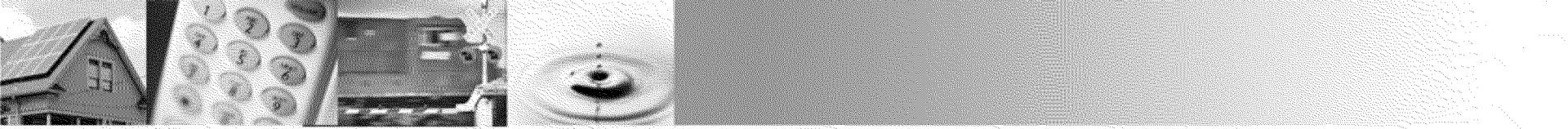




Energy Division RA Implementation

- Procurement of flexible capacity for RA
- Return to previous counting convention for rounding RA units when counting for RA
- Local RA resources under construction – flexibility in listing replacement in event of delay





Procurement of Flexible Resources

Megha Lakhchaura presenting





Overview Of Energy Division Proposal

- Restructuring of MCC buckets
- Generator and LSE Obligations
- Compliance Framework
- The Count All and Differentiated Capacity Option will be part of the later discussion





Energy Division Proposal

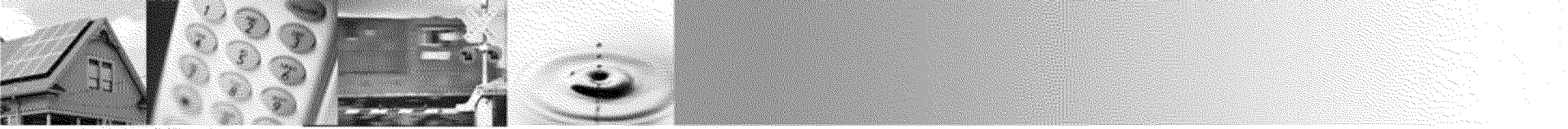
- Based on existing MCC buckets proposal
- Unlimited bucket for DR and “Flexible” resources
- Contractual requirements for “Flexible” capacity to submit bids into IFM
- No current proposal on restriction on use limited (either start limited or energy limited) resources
- Binary distinction – resources are either able to provide flexibility or not



Existing MCC buckets vs. new Buckets

Existing Bucket	Caps	Hours		New Bucket	Caps
Bucket 4	Unlimited	All Hours and Demand Response		Inflexible	Residual percentage of inflexible capacity (estimated at around 65%)
Bucket 3	33.76%	> Or = 384 Hours		Flexible	Unlimited
Bucket 2	21.7%	> Or = 160 Hours		Demand Response	Unlimited (at this time)
Bucket 1	16.21%	Up to 30			
DR Bucket	Unlimited	Unlimited			





Determination of Limit on Inflexible Bucket

- Staff will analyze annual flexibility need and establish the residual size of the “inflexible bucket”
- Based on load and flexibility obligations from off-peak months where needs are expected to be highest
- Percentage Cap on residual “inflexible” bucket held constant throughout the year
 - larger MW amount in peak months





Obligations on Generators

- Beginning 2014, all resources procured as “flexible” shall submit economic bids into the IFM between 5 AM to 10 PM.
- A generator may chose not to sell the flexible portion and instead sell the resources entire capacity as generic capacity





Obligations on LSEs

- All LSEs would be required to meet a portion of their RA obligations (outside of the “inflexible” bucket) with resources that are listed as physically capable of submitting economic bids into the IFM and of performing flexibly.
 - Resources must be able to operate continually for three hours, either ramping or holding a MW level.
- RA compliance validation will be similar to current status – LSEs make filings that are in compliance with the bucket structure

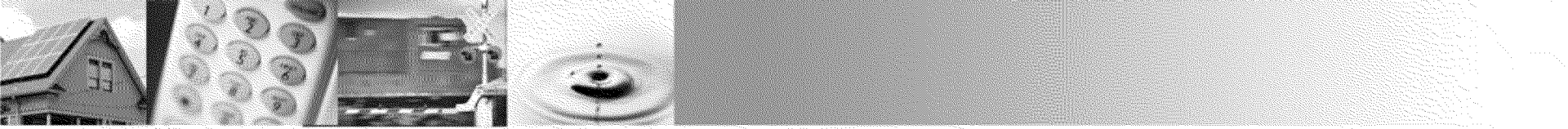




Compliance

- Annual and monthly filings consistent with current rules
- Flexible Capacity Obligations will be a percentage of system RA requirements
- Validation process similar to current process





Other Energy Division RA Refinement Proposals






Minor Proposal 1 – Rounding Convention

- Return to previous counting convention
 - CPUC adopted rounding convention whereby RA obligations (both Local and System) are rounded to 1 decimal place (Tenths)
 - LSEs had difficulty procuring small decimal quantities of RA in order to comply, resulting in LSEs procuring more than needed.
 - Energy Division proposes returning to previous rounding convention (round to whole MWs when over 0.5 MWs and less than 0.5 MW rounded to next lowest whole MW)

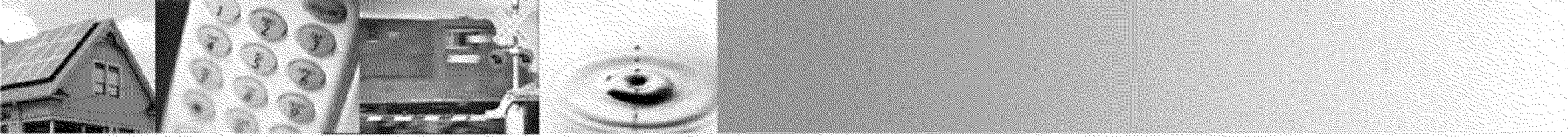




Minor Proposal 2 – Local RA under construction

- D.08-06-031 and D.09-06-028 adopt a process for resources under construction to count towards local RA obligations for year ahead filing
- Old- LSEs were required to name the replacement unit that would fill in until the resource reached COD at time of year ahead RA filing.
- New Energy Division proposes that LSEs can name replacement unit during Month Ahead RA compliance filings instead of in the year ahead RA filing

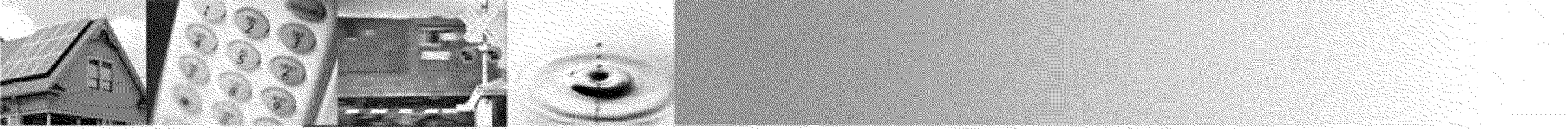




Break

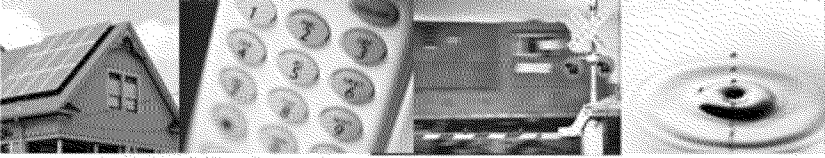
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Focus on the Energy Division Proposal





Description of issue

- Resources have various cold start up times. After the resource has cooled down and gone completely offline, they take time to restart.
- There are some resources with very long start up times – particularly very old resources and some of the newer combined cycle plants.





Challenges Posed

- How will the choices we make in this proceeding facilitate further refinement later?
- How to account for differences and the services they provide, in the context of necessarily generic market product definitions
- How does California differentiate between efficient generation and older more polluting generation while using similar incentives?
- How does flexible operation fit into the total revenue streams of resources that have very different cost streams?



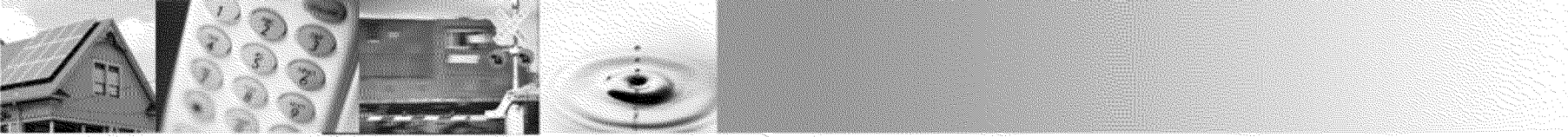


Advantages

Simplifies Compliance

- Implementation - partial units easy to validate
- Minimum disruption to RA program
- LSEs can comply based on one value, not manage two sets of MW values for a particular resources.
- All LSEs can buy the same product from a generator, no need to track who purchased a “flexible” MW or an “inflexible” MW
- Limited grandfathering issue





Info on Pmin and start up time

Resources are diverse and operate differently. However start up time is an important factor. This data is drawn from CAISO Masterfile data, and is presented as a point to begin conversation.

	Pmax (MW)	Pmin (MW)	Percentage
Total Potentially Flexible generation	40432	10542	26%
Resources with startup time greater than 90 minutes	30076.97	6584.18	22%
Resources with startup time greater than 120 minutes	27008	5583	21%

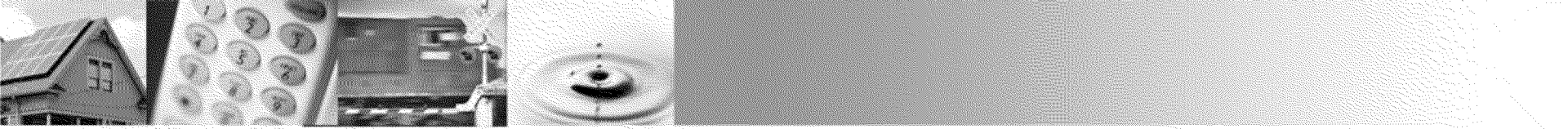




Disadvantages

- Doesn't incentivize generators to reduce Pmin or start up times, and doesn't incentivize development of new more flexible resources
 - LTPP directed IOU procurement could develop these products
- Generators could end up selling up to PMin and provide no real flexibility in bids
- Increases needs by a large amount (Flexibility Needs +PMin)
 - Pmin averages about 26% of total Flexible Fleet capacity, although slower starting units have lower operating levels

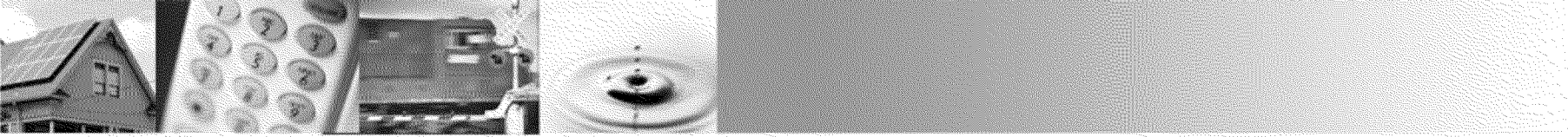




Disadvantages

Must use weighted average ramp rate - Hard to differentiate between ramping segments with different ramp rates as a unit ramps up to NQC.





Questions

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Next Steps

- Summary for court reporter
- Action Items from today's workshop
- Comments due February 13
- Reply comments due February 27

