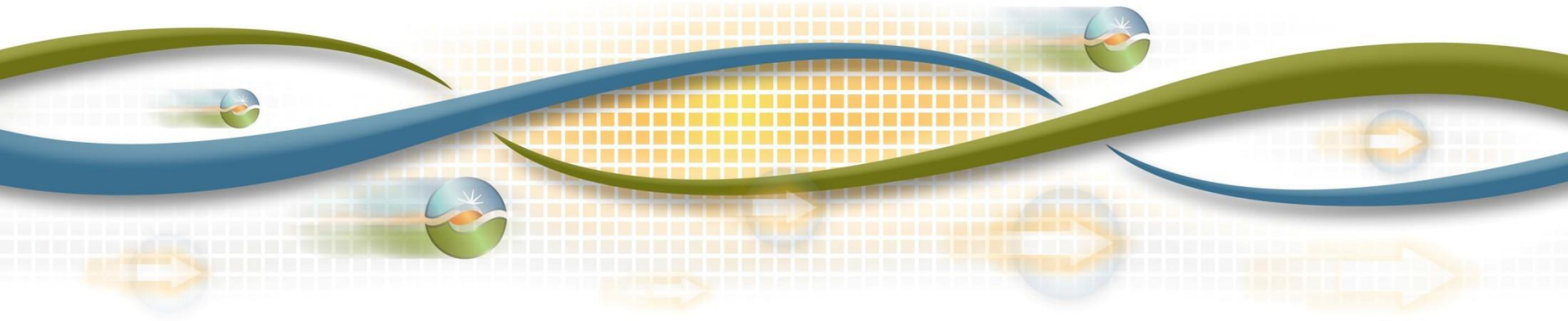




Proxy Demand Resource (PDR) & Reliability Demand Response Resource (RD RR) Participation Overview



CAISO has introduced two products both relying on the same technical functionality and infrastructure

Design	Acronym	Services	Market dispatch	Description
Proxy Demand Resource	PDR	Energy, spin, non-spin, residual unit commitment (RUC)	Economic day-ahead and real-time	Bids into ISO markets as supply
Reliability Demand Response Resource	RDRR	Energy	Economic day-ahead, reliability real-time	Bids into ISO markets <u>as supply</u> ; used for reliability purposes

PDR participates in the CAISO comparable to a supply resource

PDR can bid economically into the following markets:

- Day-Ahead energy market
- Day-Ahead and Real-Time Non-Spinning Reserve market, and Spinning Reserve
- 5- Minute Real-Time Energy market

PDR must have minimum load curtailment:

- 0.1 MW (100 kW) for Day-Ahead and Real-Time energy
- 0.5 MW (500 kW) for Day-Ahead and Real-Time energy Non-Spinning Reserve, and Spinning Reserve
- Smaller Loads may be aggregated together to achieve minimum

RDRR enables CPUC jurisdictional emergency responsive demand response resource participation in the ISO market and operations

RDRR participates in the ISO as follows:

- Day-Ahead Market
- Respond to a reliability event for the delivery of “reliability energy” in Real-Time
- May not submit RUC availability or Ancillary Service bids.
- May not self-provide Ancillary Services.

RDRR must have the following characteristics:

- Minimum load curtailment = 0.5 MW (500 kW)
- Deliver reliability energy in real-time reaching full curtailment within 40 minutes
 - Minimum run time > (1) hour
 - Maximum run time < (4) hours

RDRP resources may elect to receive discrete dispatches (all or nothing)

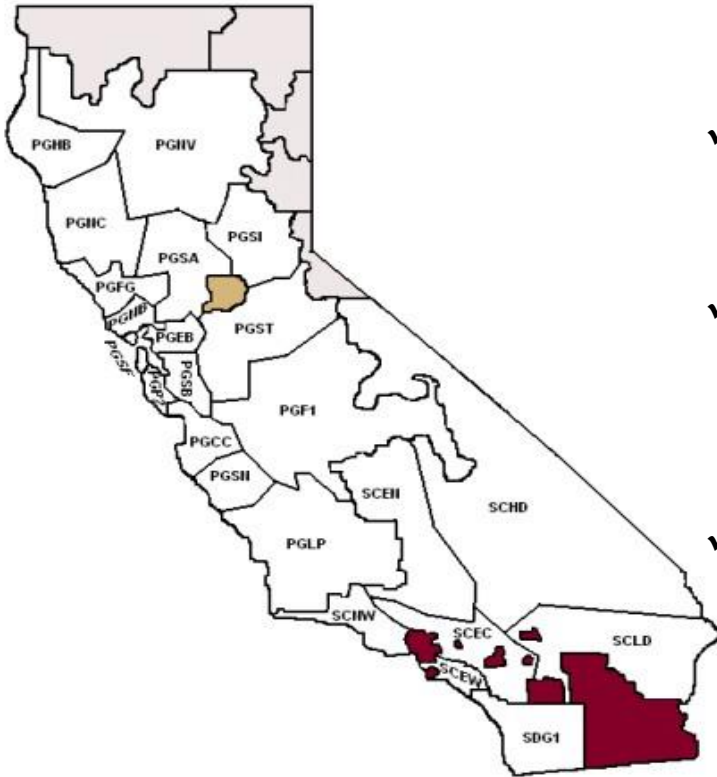
- Limited in size up to 50 MW

RDRR participation is limited to CPUC jurisdictional program integration

-Capped on the amount of MWs that count for Resource Adequacy based on a CPUC settlement agreement

Resource aggregations are required to be within a single sub-Load Aggregation Point (LAP).

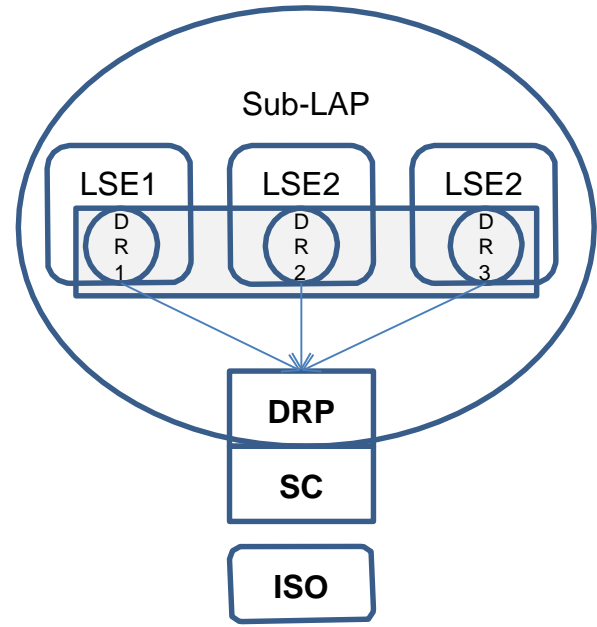
- *Ensures demand response resource dispatch does not create additional congestion*



- ✓ A sub-LAP is an ISO-defined subset of pricing nodes (Pnodes) within a default LAP.
- ✓ 24 sub-LAPs were created to reflect major transmission constraints within each utility service territory (default LAP)
- ✓ Developed initially for congestion revenue rights (CRRs)

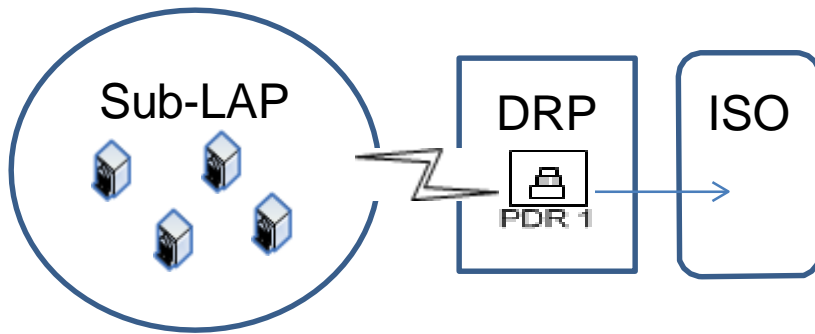
Resource aggregations are required for a single load serving entity (LSE)

- ✓ Provides visibility of DR awards to LSEs
- ✓ Ensures ability to identify individual default load adjustment (DLA) contribution of LSE specific location performance



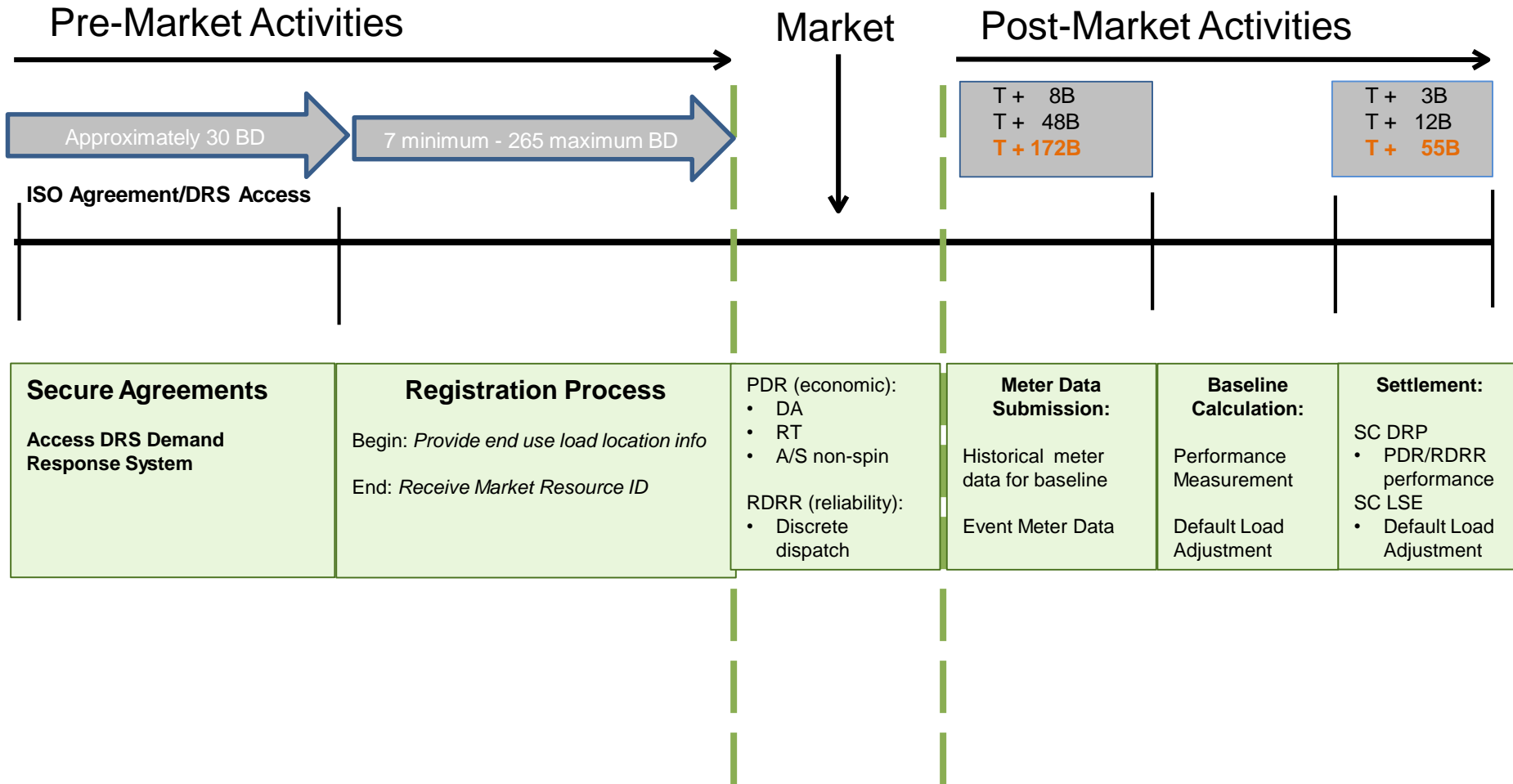
Resource aggregations of 10 MW and above and those providing ancillary services require telemetry.

- *Ensures visibility for real-time operation of the grid and compliance to mandatory and enforceable NERC and WECC approved reliability standards.*



- ✓ RDRR does not require telemetry
- ✓ Telemetry is provided for the aggregate resource
- ✓ A single remote intelligent gateway (RIG) can represent multiple DR resources

Sequential activities prepare for PDR/RDRR market participation



Registration process - aggregated participation to multiple entities.

Create location

- UDC account # primary key
- validations
 - duplication check across DRP locations
 - completeness validation

Create registration

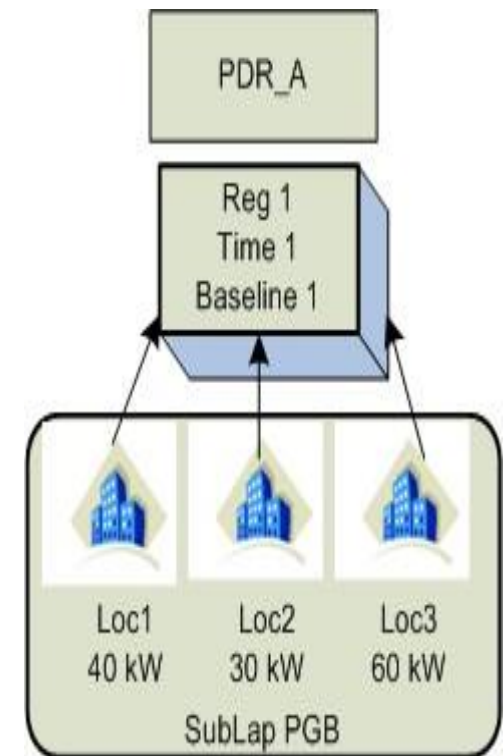
- locations aggregated to create registration
- validations
 - duplicate location across registrations
 - Sub-Lap/LSE/total load reduction

LSE/UDC/ISO registration review

- UDC/LSE review registration including locations

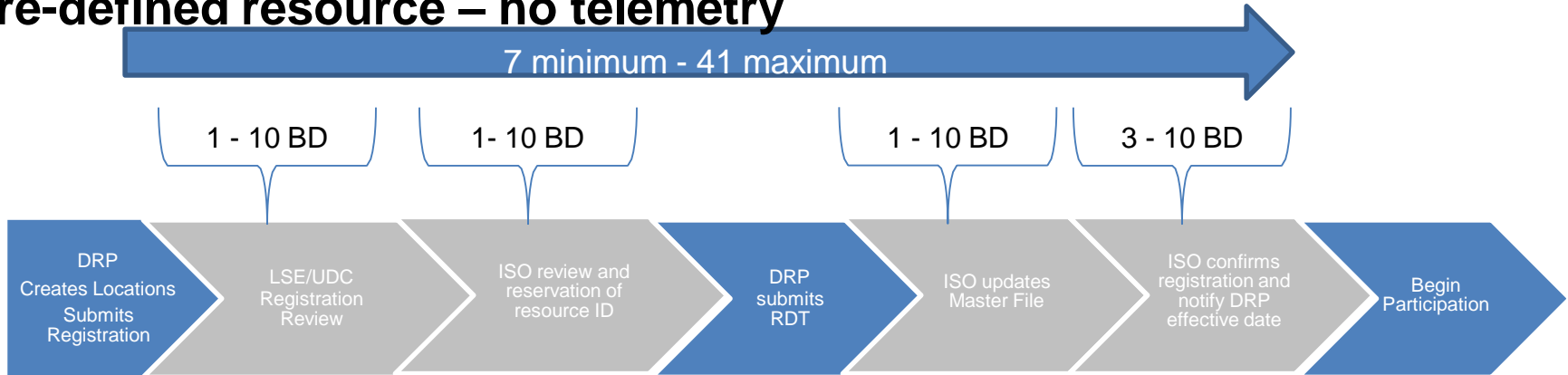
Create resource and confirm

- resource ID provided, Resource data template submitted
- masterfile updated

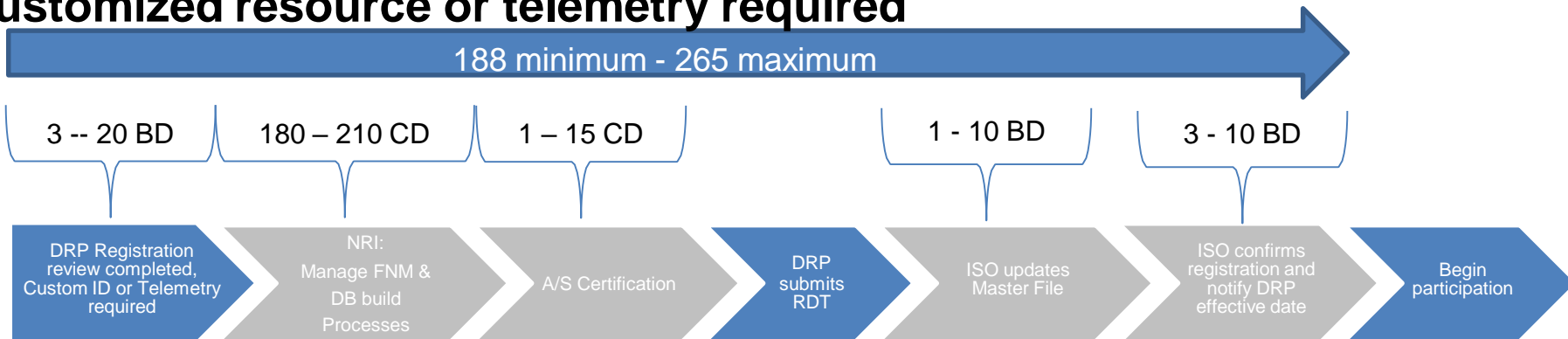


Timelines are affected by level and type of participation

Pre-defined resource – no telemetry



Customized resource or telemetry required



Deadlines for DR resources remain consistent with timelines for all resource types including load.

Meter data submitted by SC as SQMD

- historical meter data for baseline
- event meter data

T + 8 B initial
T + 48B recalculation
T + 172B recalculation

Calculation in DR system

- baseline
- performance measurement
- only

Settlement

- Direct settlement of PDR/RDRR performance with DRP's SC
- Default load adjustment calculated and applied to LSE load meter data if applicable

T + 3B initial
T + 12B recalculation
T + 55B recalculation

Participants have options for their baseline methodology.

- *Baselines supports DR participation with separation between DRP and LSE*

- ✓ **10 in 10 non-event day baseline methodology will be calculated by ISO**
- ✓ **Alternative baseline can be used with ISO approval**

Date	Type	Event	HE14
4/15/2009	WD	N	15.00
4/16/2009	WD	N	15.75
4/17/2009	WE	N	10.50
4/18/2009	WE	N	9.50
4/19/2009	WD	N	13.75
4/20/2009	WD	N	14.00
4/21/2009	WD	N	14.75
4/22/2009	WD	N	14.00
4/23/2009	WD	N	13.75
4/24/2009	WE	N	6.00
4/25/2009	WE	N	15.75
4/26/2009	WD	Y	14.80
4/27/2009	WD	Y	15.50
4/28/2009	WD	N	14.00
4/29/2009	WD	N	14.00
4/30/2009	WD	N	13.80

- Conform to North American Energy Standards Board (NAESB) standards
- May require tariff amendment
- Submitted as generation meter data
 - “Hourly Gen” choice in DRS

Selection Criteria Type=WD
 Event=N
 Where WD = Week Day
 WE = Week End
 Event = Y if DA schedule, RT/AS dispatch or Outage

Date	MWH	Selection
4/15/2009	15.00	10
4/16/2009	15.75	9
4/19/2009	13.75	8
4/20/2009	14.00	7
4/21/2009	14.75	6
4/22/2009	14.00	5
4/23/2009	13.75	4
4/28/2009	14.00	3
4/29/2009	14.00	2
4/30/2009	13.80	1
10 Day Avg (Raw Baseline)	14.28	

CAISO website has comprehensive training material for PDR and RDRR participation

Reliability Demand Response Resource link:

<http://www.caiso.com/Documents/ReliabilityDemandResponseResourceOverview.pdf>

Proxy Demand Resource link:

<http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=F5B0124F-E035-45C3-A482-7F1F3F8B590A>