11. Dispatch Information/ADS

Welcome to the *Dispatch Information* section of CAISO *BPM for Market Instruments*. In this section you will find the following information:

Application Function.

Dispatch Instruction Cycle

Dispatch Information

Data Dictionary for ADS

Technical Information for ADS

Automated Dispatching System (ADS) is the application developed by CAISO to communicate real-time dispatch instructions to Market Participants. Users of ADS are able to:

Receive and generally respond to in-hour dispatch instructions in real-time.

Receive confirmation of accepted pre-dispatch instructions

Retain a local record of the transactions

Query a database for historical instructions.

11.1 ADS Instruction Cycle

The typical ADS instruction cycle is as follows:

The RTM application determines the Energy needed to meet demand. An instruction list, in the form of a requested MW amount for each resource is generated from Ancillary Services and Energy Bids in the RTM.

The instruction list is transferred from RTM to the ADS system and is sent to the Market Participant.

All ADS instructions are Binding for all non-intertie resources.

The ADS system determines who has rights to view and to respond to each of the instructions and sends individual instructions to authorized ADS users based on the digital certificate (this will be the same certificate used for CAISO Portal access) used to login to ADS and the ADS Client associated with the certificate. Each ADS Client is

associated with one or more resources and can have Primary, Secondary or Read only permissions on the identified resources.

For all non-intertie resources, ADS automatically obtains an acknowledgement per instruction once it reaches the corresponding ADS client.

ADS automatically responds with an “accept”.

The user has approximately 90 seconds to review the instruction and is then expected to begin ramping to meet the instruction MW.

For example, an instruction is received by ADS at 1:31:00. The user must begin ramping the resource at 1:32:30 and reach the RT DOT MW at 1:37:30. The target time of 1:37:30 is labeled DOT Start Time on the ADS display

Nevertheless, when the instruction is from RTCD in response to a contingency event, it is expected that resources respond and begin ramping to meet the instruction MW as soon as possible.

NOTE: If there are any known limitations to dispatchable resources, a SLIC ticket will need to be submitted prior to receiving Real Time dispatch instructions.

For Intertie System Resources, the user (with Primary or Secondary permissions) has the option to accept, partially accept or decline the instruction. The user is allowed to provide a response or undo a response at any time within the 5 minute window.

If the user does not respond within the 5 minute window, ADS automatically responds with a "Timed–out” and the supplemental portion of the instruction will be forcibly declined. The CAISO dispatcher may modify the response up until the close of the instruction cycle at 45 minutes after the hour. Dispatch Information Supplied by CAISO

11.2 Dispatch Information Supplied by CAISO

The output information from the RTM applications that CAISO sends to ADS is listed in Exhibit 11-1.

Exhibit 11-1: ADS Output

Application	Output
HASP	Hourly Pre-dispatch for hourly pre-dispatch resources
	Hourly AS Awards for hourly pre-dispatched resources

STUC	Binding start-up and shut-down instructions (looks ahead 4hours beyond the Trading hour) (Can be Advisory or Binding depending on the resource limitations to meet start-up)
RTUC	Binding start-up and shut-down instructions
	Binding 15 minute AS Awards for five-min dispatchable resources
RTED	Binding five minute dispatch for five -min dispatchable resources
RTMD	Binding five minute **Manual** dispatch for five -min dispatchable resources
RTCD	Binding **10** minute **contingency** dispatch for five -min dispatchable resources

Please refer to section 2.3.2 Real Time Market Process of the *BPM for Market Operations* for a description of the HASP, STUC, RTUC, RTED, RTMD, and RTCD.

11.3 ADS DOT Breakdown

This is intended to clarify the various MW components in CAISO's Automated Dispatch System (ADS) for the Dispatch Operating Target (DOT) breakdown. Relevant business functions and usages of these components are also described as well.

1. Business Purpose

The DOT breakdown that CAISO provides to market participants through ADS is to provide the energy component in terms of MW capacity constituting the DOT MW. It can be used for two different purposes:

1. Operational including, but not limited to, compliance checking, available operating reserve calculation, etc.
2. Shadow settlement.

Although these components are used to represent energy component of the DOT, they are calculated and represented in terms of MW capacity and hence they do not represent the energy difference due to ramping effect between intervals.

There are two types of real-time dispatch instructions that CAISO sends out through ADS, i.e., hourly pre-dispatch (RTPD) instruction and real-time dispatch (RTD) instruction. There are some subtle differences in how to interpret and use those MWs between those two types of instructions.

2. DOT Breakdown in Hourly Pre-dispatch Instruction

The hourly pre-dispatch instructions apply to hourly pre-dispatch resources, i.e., the inter-tie system resources. There are two critical components,

SCHED: The SCHED MW reflects the real-time energy self schedule for that resource in the SIBR clean bid;

SUPP: This MW is the difference between DOT and SCHED calculated by (DOT – SCHED). It is effectively the incremental (positive) or decremental (negative) from the self schedule MW.

Although the standard ramp RMPS is also calculated for the inter-tie resources in the DOT breakdown, the standard ramp has little relevance to the ultimate energy settlement of hourly pre-dispatched system resources since such energy is accounted for on a block basis. It is also worth mentioning that, there are two scenarios under which the SCHED will be equal to the final day-ahead energy schedule,

Scenario 1, for the market participants who elects to protect their day-ahead final energy schedule from IFM, i.e., the DA energy schedule MW is submitted as real-time self schedule;

Scenario 2: no explicit real-time energy bid curve or self schedule is submitted. SIBR will convert the final DA energy schedule into a real-time self schedule.

Following examples assume a real-time self schedule MW as 80MW,

- Example 2.1 (incremental),

DOT: 100MW

DOT breakdown is,

SCHED: +80MW

SUPP: +20MW

- Example 2.2 (decremental),

DOT: 60MW

DOT breakdown is,

SCHED: +80MW

SUPP: -20MW

2.1 ADS Decline Functionality For Hourly Pre-dispatch Instruction

In ADS, we allow the market participants to decline or partially accept a pre-dispatch instruction[1]. It is CAISO's policy that only the SUPP component MW in the DOT

[1] Excessive declines of hourly pre-dispatched instructions for System Resources can be subject to penalties.

breakdown can be rejected or partially accepted. In other words, the SCHED MW component cannot be changed after the HASP run. A final accepted DOT is recorded in ADS and available to market participant as “Accept DOT”.

Decline/Partial Accept for example 2.1,

Market participants can decline the 20MW or partially accept any portion of the 20MW. Therefore the Accept DOT will be any number between 80MW to 100MW.

Decline of 20MW: Accept DOT will become 80MW;

Partially acceptance of 10MW out of 20: Accept DOT will become 90MW;

Full acceptance of 20MW: Accept DOT will stay as 100MW.

Decline/Partial Accept for example 2.2,

Market participants can decline the -20MW or partially accept any portion of the -20MW. Therefore the Accept DOT will be any number between 60MW to 80MW.

Decline of -20MW: Accept DOT will become 80MW;

Partially acceptance of -10MW out of -20: Accept DOT will become 70MW;

Full acceptance of -20MW: Accept DOT will stay as 60MW.

3. DOT Breakdown in Real-time Dispatch Instruction

The real-time dispatch instructions apply to non hourly pre-dispatch resources, i.e., the generators, tie generators (including dynamic resources and the resources used to model AS import on the ties) and participating loads (using the pump-storage model). There are five critical components here,

SCHED: The SCHED MW reflects the real-time self energy schedule for that resource in the SIBR clean bid;

SUPP: This MW is the difference between DOT and SCHED calculated by (DOT – SCHED). It reflects the incremental (positive) or decremental (negative) from the self schedule MW. SUPP is inclusive of the SPIN and NSPN MWs and MSSLF whichever applicable;

SPIN: If this resource gets dispatched out of spin capacity (either in contingency or non-contingency mode[2]), this value will reflect dispatched SPIN capacity amount. Otherwise, this amount is zero. SPIN MW can be used for available reserve calculation;

[2] Although it is not the scope of this document, it is worth mentioning that a contingency AS can only be dispatched in a contingency dispatch run or if the resource is flagged as contingency individually. A non-contingent AS can be dispatched in a normal real-time interval dispatch.

NSPN: If this resource gets dispatched out of non-spin capacity (either in contingency or non-contingency mode[3]), this value will reflect dispatched Non-Spin capacity amount. Otherwise, this amount is zero. Non-SPIN MW can be used for available reserve calculation;

MSSLF: This only applies to MSS load following resources. If market participants submit MSS load following instructions for those resources, the validated load following instructions will be sent back through this component. For all non load following resources, this amount will be zero.

Although the standard ramp RMPS is also provided for the real-time dispatch instructions in the DOT breakdown, it is recommended the value of RMPS be determined outside of the dispatch instruction based on the standard ramp 20 minute cross-hour ramp between Day-Ahead schedules. It is also worth mentioning that, there are two scenarios under which the SCHED will be equal to the final day-ahead energy schedule,

Scenario 1, for the market participants who elects to protect their day-ahead final energy schedule from IFM, i.e., the DA energy schedule MW is used to submitted as real-time self schedule;

Scenario 2: no explicit real-time energy bid curve or self schedule is submitted. SIBR will convert the final DA energy schedule into a real-time self schedule.

Following examples assume a real-time self schedule MW as 80MW,

- Example 3.1 (incremental without dispatch out of Spin or Non-Spin),

DOT: 100MW

DOT breakdown is,

SCHED: +80MW

SUPP: +20MW

- Example 3.2 (incremental with dispatch out of Spin and Non-Spin),

DOT: 100MW

DOT breakdown is,

SCHED: +80MW

SUPP: +20MW

SPIN: +5MW

NSPN: +5MW

[3] See Note 1.

In example 3.2, the 5 MWs for dispatched out of Spin and Non-spin are part of the SUPP as the incremental amount. Besides the 5 MWs from Spin and Non-spin, it implies the 20 – 5 -5 = 10MW as the market energy dispatch component. This is different from the current ADS in production in which the SUPP is exclusive from the Spin and Non-spin amount.

- Example 3.3 (decremental),

DOT: 60MW

DOT breakdown is,

SCHED: +80MW

SUPP: -20MW

- Example 3.4 (incremental with dispatch out of Spin, Non-Spin And Load following),

DOT: 100MW

DOT breakdown is,

SCHED: +80MW

SUPP: +20MW

SPIN: +5MW

NSPN: +5MW

MSSLF: +5MW

In example 3.4, the 5 MWs for dispatched out of Spin, Non-spin and MSS load following are part of the SUPP as the incremental amount. Besides the 5 MWs from Spin, Non-spin and MSSLF, it implies the 20 – 5 -5 – 5 = 5MW as the market energy dispatch component not associated with any other capacity.

- Example 3.5 (decremental with MSS load following),

DOT: 60MW

DOT breakdown is,

SCHED: +80MW

SUPP: -20MW

MSSLF: -5MW

In example 3.5, the -5 MWs for MSS load following are part of the SUPP as the decremental amount. Besides the -5 MWs from MSSLF, it implies the -20 – (-5) = -15MW as the market energy dispatch component.

11.4 Technical Information for ADS

The ADS Technical information for the system will be made available on the CAISO Website. ADS Technical Information can be found at:
http://www.caiso.com/clientserv/ads/index.html

Technical information posted includes:

- User Documentation (installation and set up guides)
- API information, such as an interface specification with supporting WSDL and XSD files
- Business level documentation

Exceptional Dispatch Instruction Type Codes can be found at:
http://www.caiso.com/23fb/23fba87657500.pdf