Texas Nodal Process Timeline

The time-based baseline for high-level inputs and outputs across defined time periods, including cycle time and a closer look at the market processes

July 24th 2006

Guideline

OBJECTIVES:

1. Establish a common understanding of Nodal inputs and outputs from a time-based perspective.
2. Understand the end-to-end timeline of the Nodal market.
3. Provide a high-level view of the volume of Nodal interfaces.

ASSUMPTIONS:

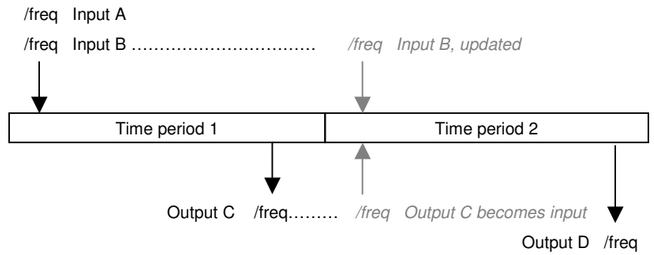
1. The ***naming*** of inputs/outputs currently follow protocols if possible, and may be subject to change/re-categorization when the data dictionary is defined.
2. These diagrams may include ***design*** decisions that are not specified in Nodal protocols.
3. These diagrams do not intend to reflect every "unhappy path".
4. The processes and information from ***retail*** processes are not included.
5. The cycle time for compliance, PUCT or protocol mandates, such as "***post to MIS***", may differ from the cycle times reflected in the baseline and they will be reflected separately (TBD).
6. The ***network models*** are distinct but "as much as practicable, have information consistent with the Network Operations Model", as specified in the protocols. They include the Network Operations Model (DAM and RT each have a separate version), CRR Network Model and the Annual Planning Model.
7. The ***settlement point prices*** (SPPs) and ***aggregated base points*** are calculated by MMS, not settlements.
8. Any required ***reporting, extracts and analyses*** are represented here under "extracts and reports (all)", and include compliance, monitoring, generation and load, settlement and billing, system operations and market operations.
9. The ***CRR auction results*** are represented and updated as part of the ownership records.
10. Cycle time for ***financial payments*** (and ***invoices*** for late fees, etc.) are not reflected.
11. The "asset and entity application" includes the ***resource parameters***.
12. The "Notification of Suspension of Operations" may, but does not necessarily, result in an ***RMR agreement***.

TIME PERIODS:

"Long term planning" = far in advance or annual processes
"Before day ahead" = months/days before the "Day Ahead"
"Day Ahead" = the day before the Operating Day (today)
"Up to end of Adjustment Period" = today up till end of Adjustment Period ***(incl. last H-RUC)***
"Operating Hour" = the current hour ("T" in protocols)
"After" = after Operating Day

LEGEND:

1. Baseline view – *high level inputs and outputs for each time period, with their cycle times*

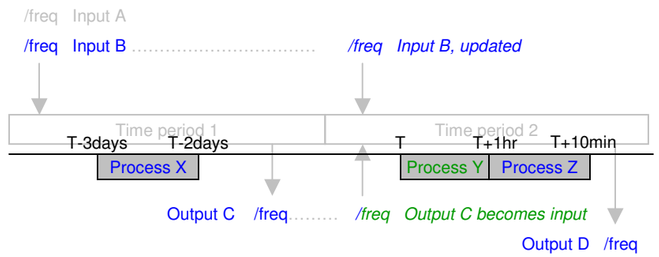


e.g. **"/mon"** = information is created, updated, or just used **every month**

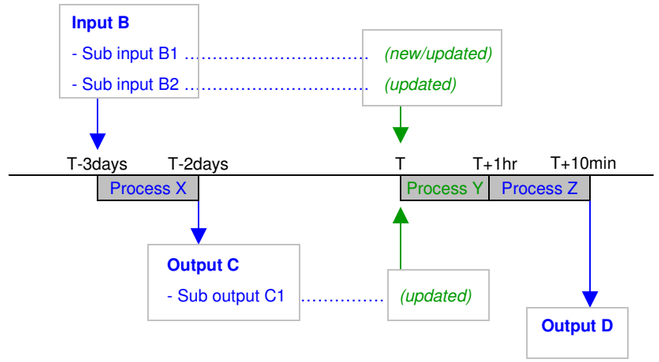
Grey Italics = generally mean that it is a previous input/output that is an **input** into another time period

Black = the FIRST time the information appears

2. Market timeline – *the market timeline super-imposed on the baseline; key inputs/outputs highlighted*



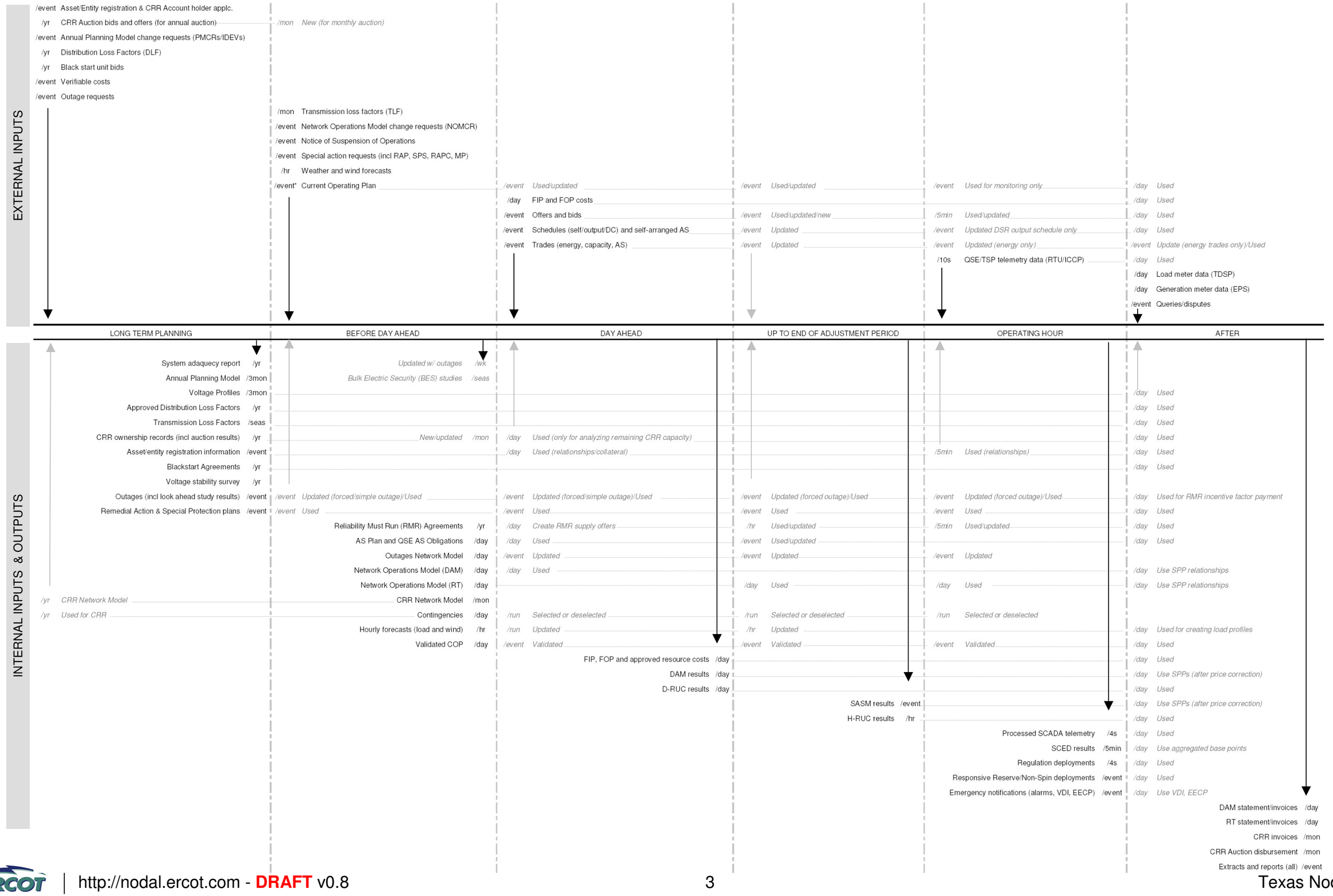
3. Market timeline (a closer look) – *a drilldown of highlighted inputs and outputs from 2.*



4. Market participant interface points

– *cycle time of baseline information that needs to interact (including "post to MIS") with market participants - TBD*

Baseline view – *all high-level inputs and outputs for each time period, including cycle-times*

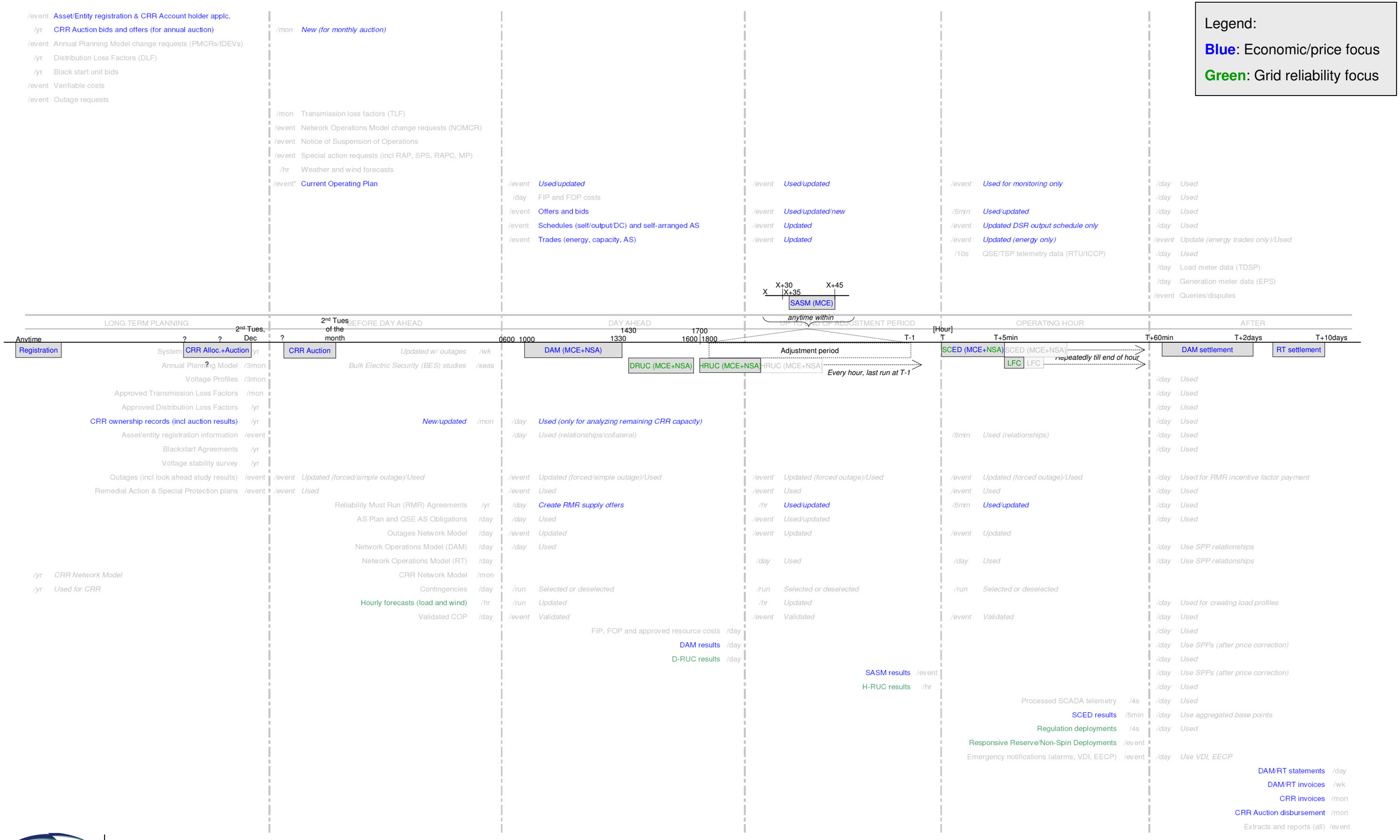


Market timeline – *the market timeline super-imposed on the baseline; key inputs/outputs highlighted*

Legend:

Blue: Economic/price focus

Green: Grid reliability focus



Market timeline (a closer look) – *A drill-down of some market timeline information (refer to previous slide)*

Asset, entity and CRR registration
- Asset and entity application
- CRR account holder application

Annual CRR Auction bids and offers
- Option bids and offers
- Obligation bids and offers
- McFRI bids and offers[8]

Monthly CRR Auction bids and offers
- *(new/updated)*
- *(new/updated)*
- *(new/updated)*

Offers and bids

- DAM Energy Bids				
- 3-part supply offers	*(existing[9])*	*(updated[9])*		*(existing 3rd part only)*
- DAM Energy-Only Offer Curves				
- Energy Offer Curves	*(update[10])*	*(updated[10])*	*(updated till T-1)*	*(existing)*
- AS offers	*(existing[11])*	*(existing[11])*	*(existing/updated till T-1 [2])*	*(existing)*
- Output sch.[3]	*(updated)*	*(updated)*	*(updated till T-1[12])*	*(updated for DSR only[12])*

(existing option offers declared to settle RT [1])
(new PTP Obligation Bids)

Current Operating Plan (COP)
- Resource status, high/low limits, AS capacity: *(updated)* | *(updated)* | *(updated till T)*

Trades, schedules, self-arranged AS, etc.

- Energy trades	*(updated)*	*(updated)*		*(updated)* — *(can update till 1430, T+1)*
- Capacity trades	*(updated)*	*(updated)*		
- AS trades	*(updated)*	*(updated)*		
- Energy self-schedules[5]				
- Self-arranged AS			*(updated/new till T-1)*	
- DC-tie schedule/NERC tags	*(updated)*	*(updated)*		

PCRR allocation nominations

RMR and BS resource availability

Anytime | ? | ? | 2nd Tues, Dec | ? | 2nd Tues of the month | 0600 | 1000 | 1330 | 1430 | 1600 | 1700 | 1800 | X | X+30 | X+35 | X+45 | X+60 | T-1 | [Hour] T | T+5min[4] | T+1hr | T+2days | T+10days

Registration | CRR Alloc.+Auction | CRR Auction | DAM (MCE+NSA) | SASM (MCE) | anytime within | SCED (MCE+NSA) | SCED (MCE+NSA) | DAM settlement | RT settlement

?

Adjustment period

DRUC (MCE+NSA) | HRUC (MCE+NSA) | HRUC (MCE+NSA) | LFC | LFC | +4s | Repeatedly till end of hour | Every hour, last run at T-1

Notice (20 days ahead): **CRR Network Model** ..... *(updated)*

Notice (10 days ahead): *(updated)*

Post/notify by X: *(if AS insufficiency/default)*

DAM statements[6] | RT statements[6]

Notice (by 0600):
- Market validation rules
- **AS Plan, QSE AS Obligations and Load Ratio Share**
- **Network Operations Model**
  - Topology
  - Settlement Point relationships
  - Bus load distribution factors
  - Dynamic ratings
- Load profiles
- Transmission/distribution loss factors
- **Hourly load forecasts**
  - Mid-term Load Forecast (MTLF)
  - Renewable Production Potential (RPP)
- **Weather assumptions**

Asset, entity, CRR registration
- Asset-entity relationships
- Credit limits

CRR Ownership Records

Alloc.[7] Notice:
- Options
- Obligations
- McFRIs

Yearly results

	(new/updated)
- Options	*(new/updated)*
- Obligations	*(new/updated)*
- McFRIs	*(new/updated)*
- Disbursement	*(monthly)*

Auction Invoices

Monthly results

	(new/updated)
- Options	*(new/updated)*
- Obligations	*(new/updated)*
- McFRIs	*(new/updated)*

Auction Invoices

DAM results

- Energy offer (3-part supply, energy-only) awards	
- AS offer awards	*(additional)*
- Energy bid awards	
(updated only)	
(additional)	
- Prices (DA MCPC, SPP, LMP, shadow)	*(SASM MCPC)*
- Total quantity of energy bids and offer awards	
- Total quantity of AS offer awards	*(additional)*
- Aggregated AS offer curve	*(additional)*
- NSA results (incl. transmission constraints)	*(updated)*
- Unit base points	

SASM results
(additional)

SCED results
(RT LMP, shadow)

D-RUC results

- Resource unit commitments	*(additional)*
- Advisory resource unit de-commitments	*(additional)*
- NSA results (incl. transmission constraints)	*(updated)*

H-RUC results
(additional)
(additional)
(updated)

Regulation deployments
Responsive Reserve/Non-spin deployments
Ancillary service limits

Explanations:

1. Only NOIEs can submit ("offer") their existing options (PCRRs) to be settled in RT; all other CRRs are settled in the DAM

2. If updated, must be received BEFORE SASM notice was sent out

3. Output schedules are submitted in place of an energy offer curve

4. SCED can also be run anytime if necessary (protocol mandate)

5. Self-schedules not used in Market process but settlements only, but needs to be validated by the market.

6. Invoices are sent out weekly, and comprise of an accumulation of 7 days, the earliest being at least three days after "T+10". Also, these statements include CRR settlement information (paybacks, etc.)

7. PCRR allocation nominations that are not granted in the yearly auction will be re-evaluated monthly and if possible, granted then.

8. Not confirmed if McFRIs (after allocation) can be offered.

9. Includes just Start-up and Min Energy curves only that were submitted. ERCOT creates Start-up and Min Energy offers for all Resources that are offline but available.

10. ERCOT creates a proxy Energy Offer Curve for RUC.

11. Usually, not needed for RUC (unless there is insufficient AS – see NP 6.5.9.3.3)

12. Including Incremental/Decremented Energy Offer Curves for DSRs.