

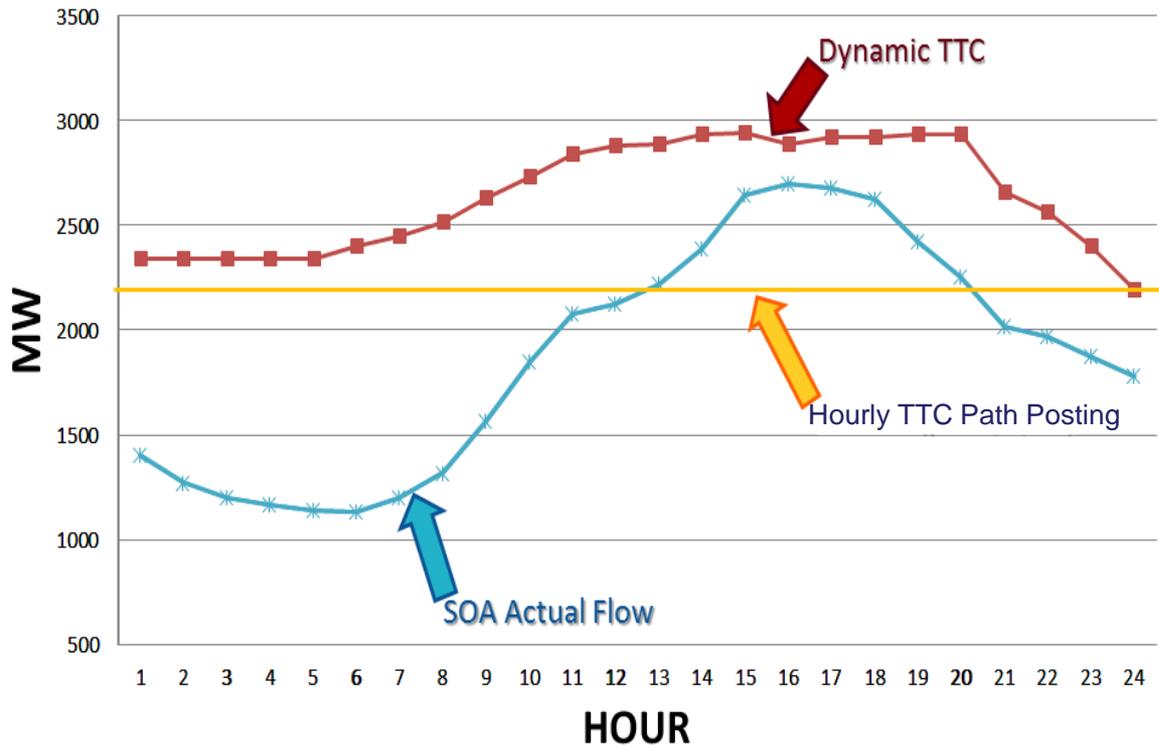
System Conditions for Reassessment CF Service over SOA path



South of Allston Path

- **BPA-owned Transmission lines:**
 - Keeler-Allston 500kV Line
 - Lexington-Ross 230kV Line
 - St.Helens-Allston 115kV Line
 - Clatsop 230/115kV Bk
- **PGE-owned Transmission Lines:**
 - Trojan-St. Marys 230kV Line
 - Trojan-Rivergate 230kV Line
- **Pacificorp-owned Transmission Lines:**
 - Merwin-St. Johns 115kV Line
 - Astoria-Seaside 115kV Line

Operation of SOA



- Developed a real-time dynamic TTC that takes into account several different generation scenarios; if the generation conditions in real-time are favorable, then the real-time dynamic TTC is raised appropriately, not to exceed 3,200MWs.

Real-time SOA Dynamic TTC

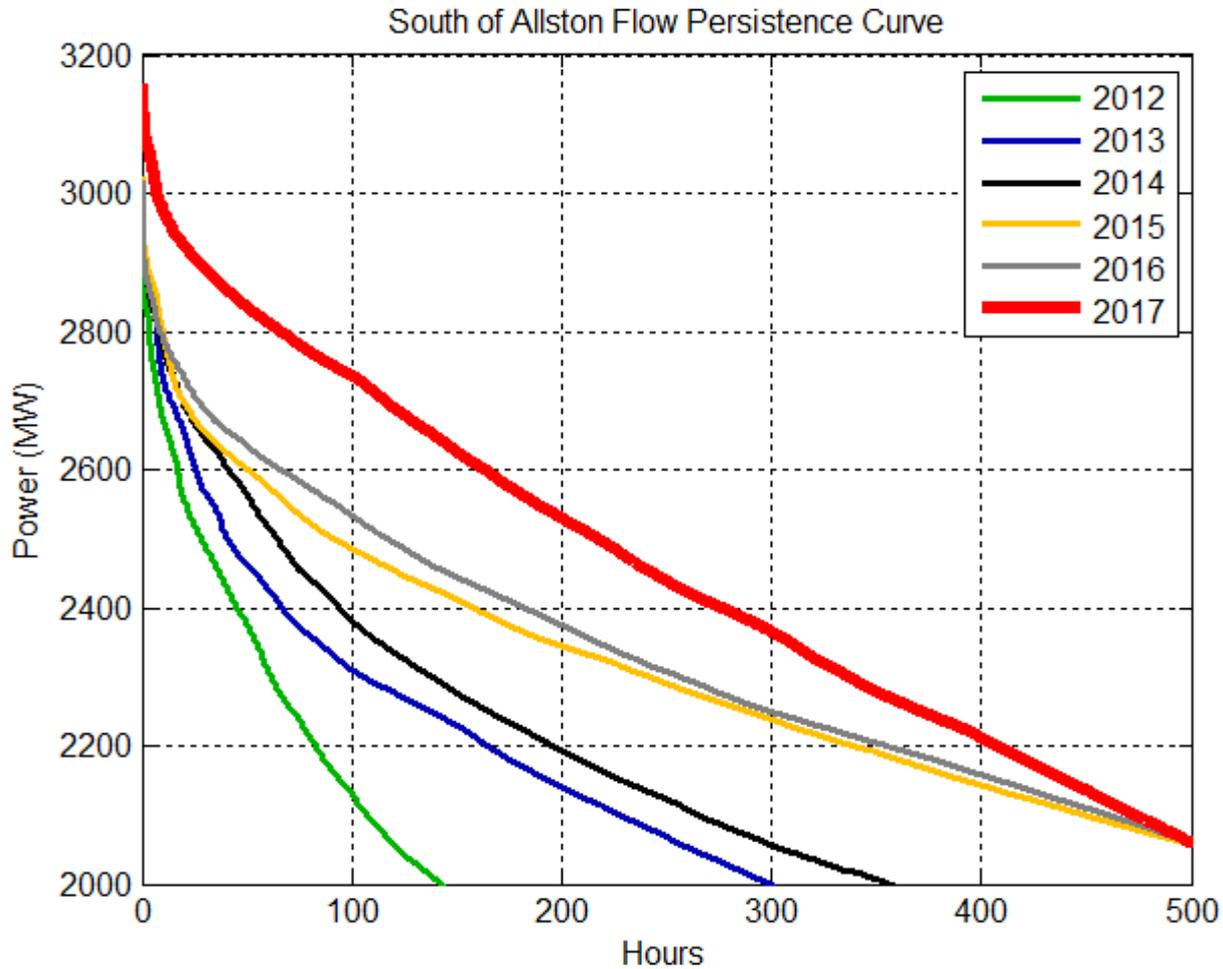
80 generation scenarios are studied to generate the table that the improved dynamic TTC uses

| | | Clark County OFF | | | | |
|------|---------|------------------|--------|--------|--------|--------|
| | | PAC: | | | | |
| | | 0 MW | 150 MW | 300 MW | 450 MW | 600 MW |
| PGE: | 0 MW | 3025 | 3200 | 3200 | 3200 | 3200 |
| | 150 MW | 3085 | 3200 | 3200 | 3200 | 3200 |
| | 300 MW | 3110 | 3200 | 3200 | 3200 | 3200 |
| | 450 MW | 3060 | 3200 | 3200 | 3200 | 3200 |
| | 600 MW | 3030 | 3200 | 3200 | 3200 | 3200 |
| | 750 MW | 2975 | 3200 | 3200 | 3200 | 3200 |
| | 900 MW | 2910 | 3200 | 3200 | 3200 | 3200 |
| | 1050 MW | 2880 | 3200 | 3200 | 3200 | 3200 |

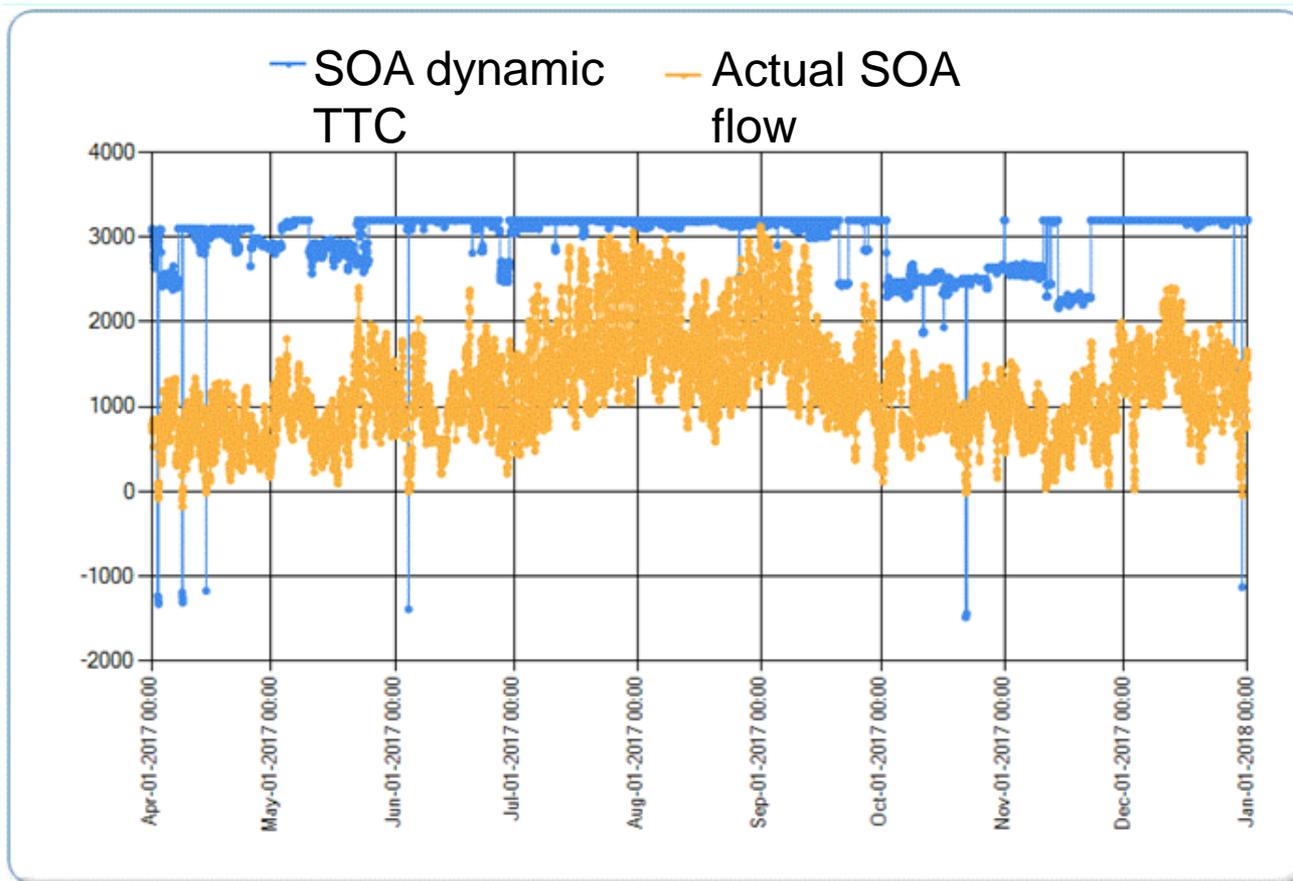
| | | Clark County ON | | | | |
|------|---------|-----------------|--------|--------|--------|--------|
| | | PAC: | | | | |
| | | 0 MW | 150 MW | 300 MW | 450 MW | 600 MW |
| PGE: | 0 MW | 3170 | 3200 | 3200 | 3200 | 3200 |
| | 150 MW | 3180 | 3200 | 3200 | 3200 | 3200 |
| | 300 MW | 3200 | 3200 | 3200 | 3200 | 3200 |
| | 450 MW | 3200 | 3200 | 3200 | 3200 | 3200 |
| | 600 MW | 3200 | 3200 | 3200 | 3200 | 3200 |
| | 750 MW | 3200 | 3200 | 3200 | 3200 | 3200 |
| | 900 MW | 3150 | 3200 | 3200 | 3200 | 3200 |
| | 1050 MW | 3125 | 3200 | 3200 | 3200 | 3200 |

Not posted on OASIS

Operation of SOA



Operation of SOA

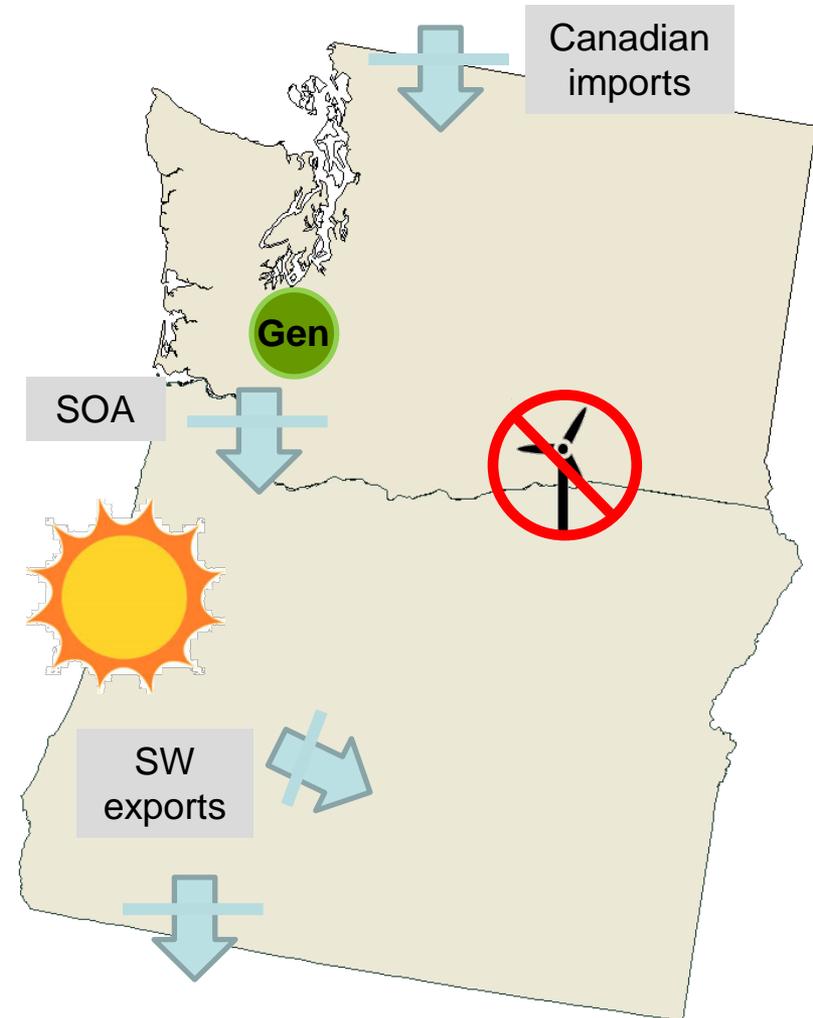


<https://transmission.bpa.gov/Business/Operations/Paths/default.aspx>

What drives high flow in SOA area?

- High load-center temperatures
- Low to no wind
- High Canadian imports
- High SW exports
- High I-5 generation

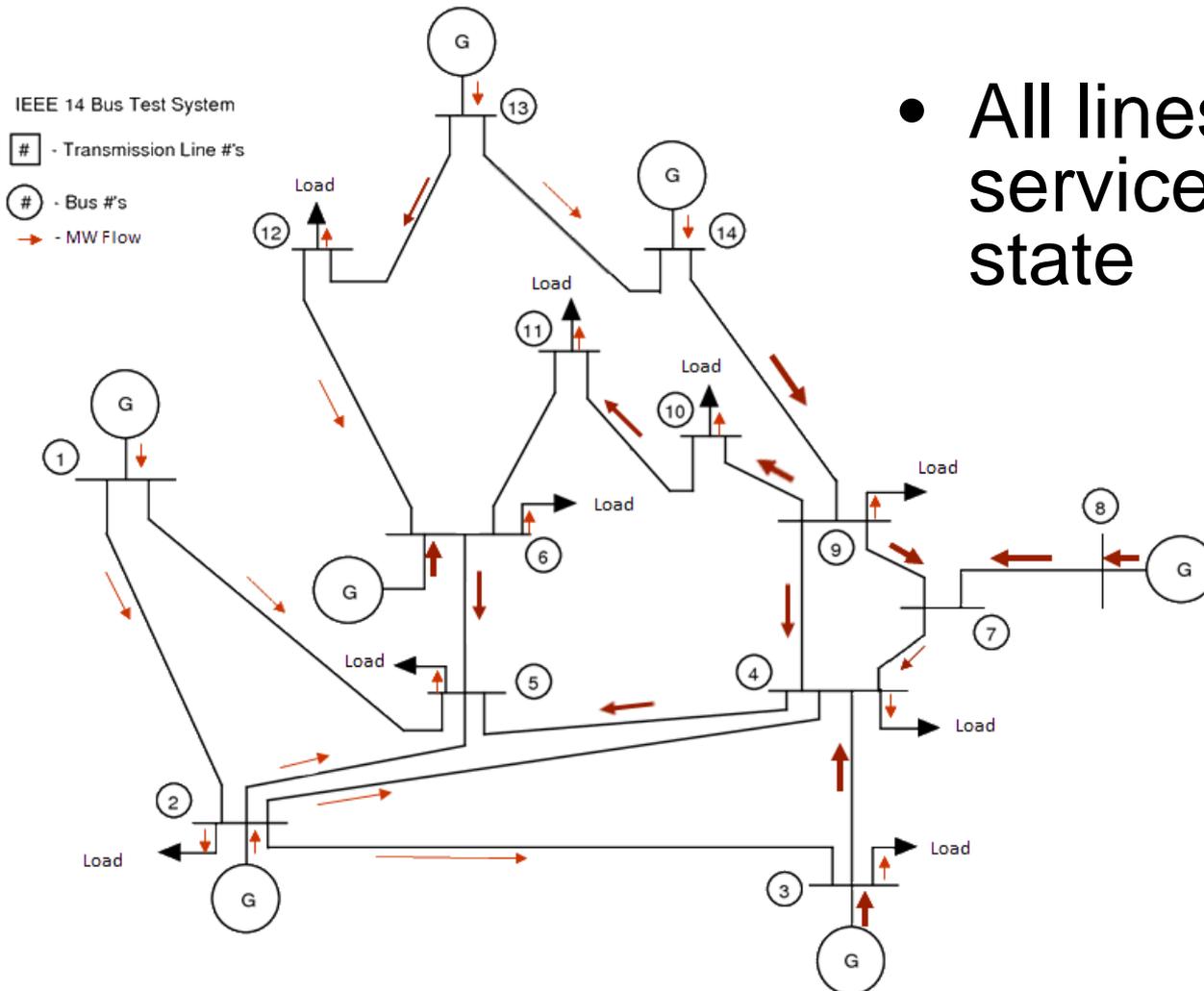
Normally, not one of these causes high flows; it's a combination of two or more that cause high flows across SOA. The likelihood of two or more occurring simultaneously is highest during the summer.



What impacts the TTC across the SOA Path?

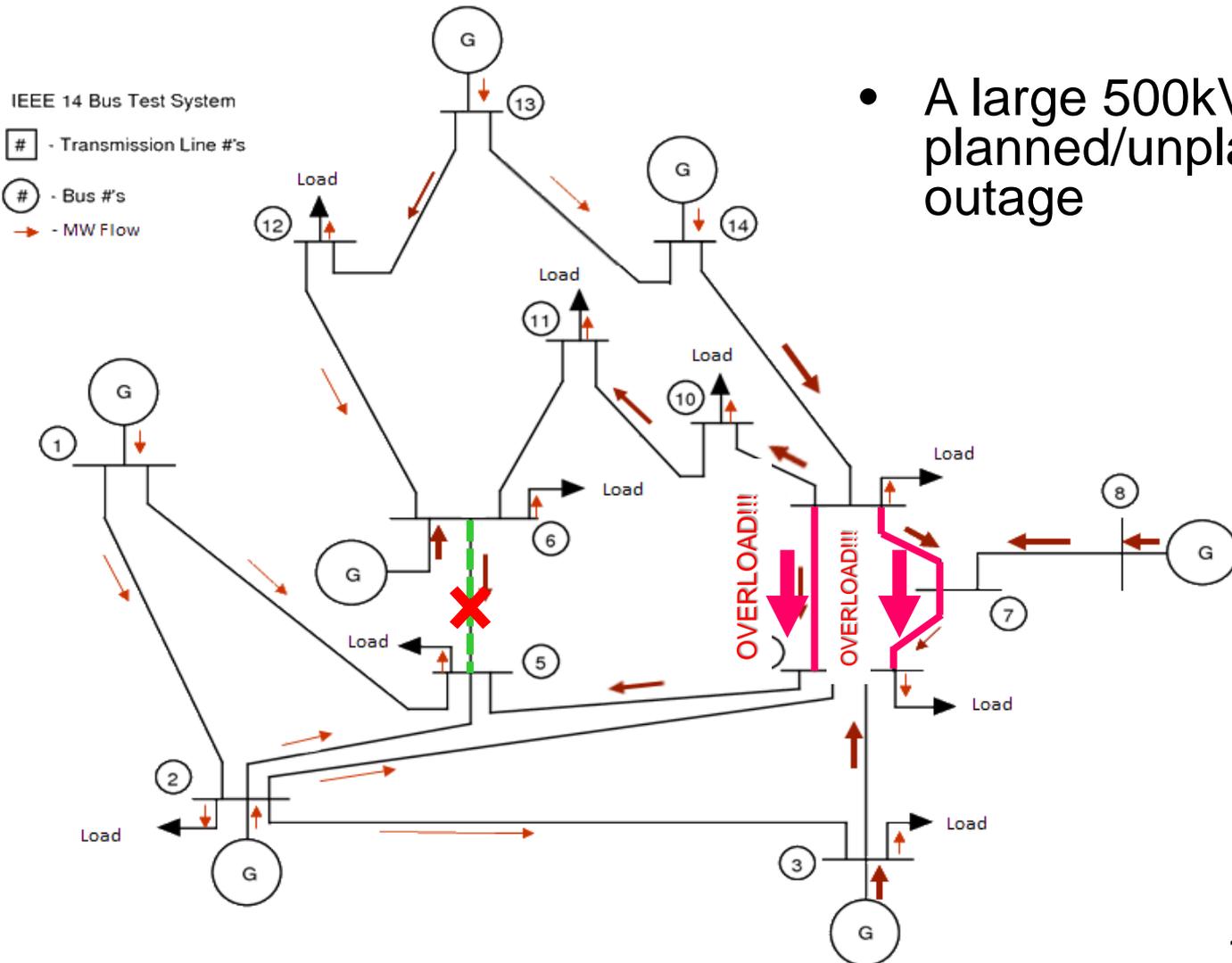
- Planned or unplanned outages
 - Unplanned outage events on SOA become harder to manage when there is congestion.
 - If the 500kV line experiences an unplanned outage, up to 2200 MWs of RAS trips generation to protect the rest of the path elements.
- I-5 generation level
 - Low gen typically causes a lower TTC

What impact does an outage have on TTC?



- All lines in service system state

What impact does an outage have on TTC?



- A large 500kV Line planned/unplanned outage

Other Considerations in the SOA Area

- Real-time assessments
 - BPA actions
 - External actions
 - Reliability Coordinator
 - Another entity such as an adjacent transmission operator.



System Condition(s)

- The system condition occurs when real-time analysis identifies curtailments on the SOA path to mitigate transmission constraints.

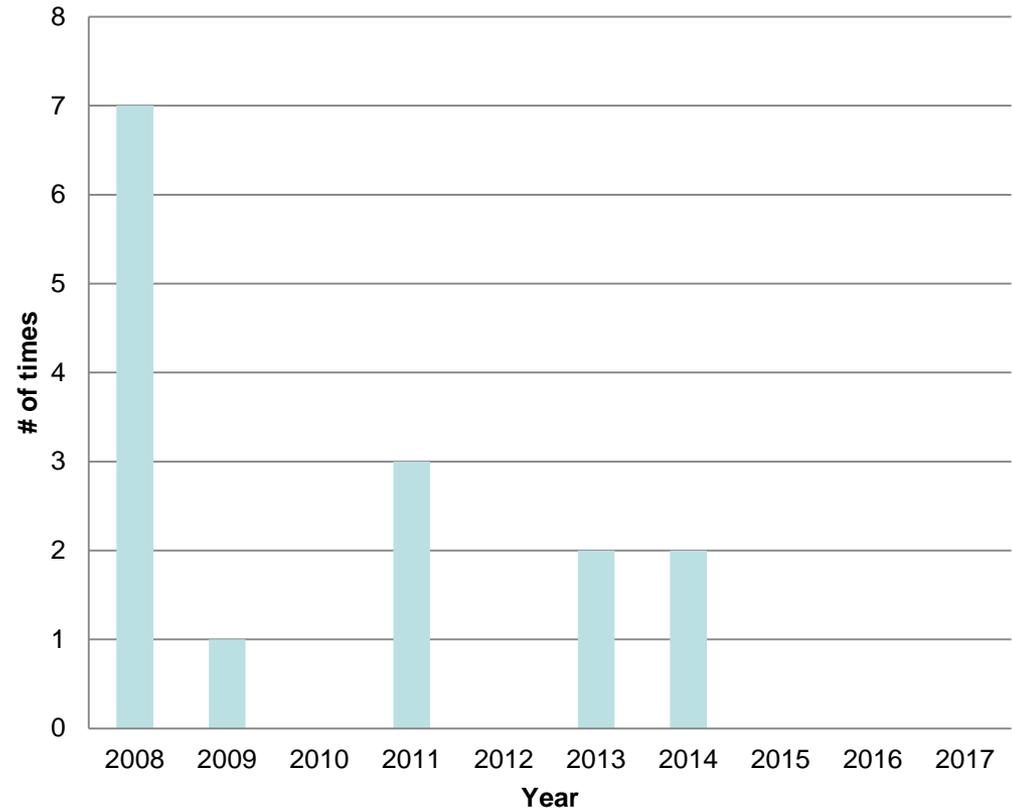
What does this mean?

- System Conditions CF schedules are tagged as firm 7-F.
- When BPA is curtailing on the SOA path to mitigate a transmission constraint, BPA system will treat those schedules as 6-CF for that curtailment.
 - Lower priority e-tags will be curtailed before 6-CF tags
 - 6-CF priority status during a curtailment preserves the higher priority 7-F transmission rights

Operation of SOA

- Even though flows have been increasing over the years, due to operational improvements, BPA has not had to curtail on SOA since 2014.
- In addition, historical curtailments were based on system operating limit exceedances under the former SOL methodology.

Curtailments on SOA



Conditional Firm – Interim vs Standard

| Service Attributes | Interim SOA Service | BPA Standard Practice |
|---|---------------------|-----------------------|
| Mandatory for previously studied PTP TSRs on SOA | ✓ | — |
| Maintains queue position & eligible for next cluster study | ✓ | — |
| Customer chooses between System Conditions or Number of Hours | — | ✓ |
| Can convert to Bridge in queue position | ✓ | — |
| All network impacts of TSR may be reassessed | ✓ | ✓ |
| Subject to Biannual Reassessment | ✓ | ✓ |
| Customer can terminate upon reassessment | ✓ | ✓ |

Process Flow for Studied TSRs

