Historical RA export from NWPP to CAISO
An analysis of CAISO-contracted Resource Adequacy import

California ISO
May 29, 2020
CAISO analysis on contracted Resource Adequacy imports from the Northwest Power Pool

- In response to a request made by the Northwest Power Pool (NWPP), the CAISO prepared this analysis of Resource Adequacy (RA) imports. The analysis is based on historical data of CAISO RA import contracts and energy flows between the NWPP and CAISO footprints.
- The NWPP request was made as part of an effort being undertaken by the NWPP to assess the resource adequacy of the NWPP region and the potential benefits of forming an RA program for the NWPP footprint.
- This analysis is based on historic data that are aggregated to a regional level, such that it does not disclose any entity-specific confidential information of contractual or operational data.
- The analysis is a historic lookback only and does not draw any conclusions with respect to future RA contracting or energy flows between the regions.
Footprint of Northwest Power Pool (NWPP)


Source: CAISO
**Terminology**

- **Capacity**
  - **Contract**
  - **Import capability**

- **Limit**
  - **Usage**
  - **Schedule**

- **CAISO BA**
  - **External BAs**
  - **CAISO import**

- **Transmission facility rating**

- **Maximum import capability (MIC)**

- **RA**
  - **Main portion of MIC**
  - **Contracted capacity**

- **RA import**: Usage ≤ Capacity ≤ Limit

- **RA**
  - **Non-RA**
  - **e-Tag interchange schedule**
CAISO maximum import capability (MIC)
A major portion of MIC is RA import capability, i.e. the “limit”

1. From NWPP Northwest
2. From NWPP NEVP+PACE
3. From NWPP BANC+TIDC

* “Maybe from NWPP”: These are imports through tie-points around the CA-NV-AZ border. Through these tie-points, import can come either from NWPP or elsewhere like Southwest

Source of MIC data: [http://www.caiso.com/planning/Pages/ReliabilityRequirements/Default.aspx](http://www.caiso.com/planning/Pages/ReliabilityRequirements/Default.aspx)
“Limit” of CAISO RA import

Estimated portion of RA import capability from “NWPP-”

- CAISO RA import capability is about 10,000 MW
- CAISO RA import capability from “NWPP-” is about 5,000 MW
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“Capacity” of CAISO RA import

Capacity of CAISO RA import (MW)

According to MIC:
Maximum possible RA import

According to CIRA [Note]:
CAISO-contracted RA import capacity

Monthly peak load drives the contracted RA capacity
There is an increasing trend of RA contracting (see next slide for detailed discussions)

[Note] CIRA (Customer Interface for Resource Adequacy) data are commercially sensitive and not publically available. To protect confidentiality, this analysis describes aggregated data.
Trends of CAISO-contracted RA import capacity
Summer and winter months

RA contracting increased over the past few years

However, the increase was only for summer months, not for winter months
How much does CAISO-contracted RA capacity come from NWPP-?

**Capacity of CAISO RA import (MW)**

- **“NWPP-”**: NWPP excluding CA BAAs
- **Areas:**
  - NWPP-NW: Northwest
  - NWPP-NP: NEVP+PACE
  - NWPP-BT: BANC+TIDC
  - Non-NWPP: Not from NWPP

- **Limit**
- **Total**
- **Capacity**
- **Headroom** ~3,000 MW
- **Approximate** ~800 MW

**Areas:**
- **NWPP-NW**: Northwest
- **NWPP-NP**: NEVP+PACE
- **NWPP-BT**: BANC+TIDC
- **Non-NWPP**: Not from NWPP

**From NWPP-NP**
**Maybe from NWPP-NP**
**Non-NWPP**

See also Limit on Slide 8 and Usage on Slide 17

ISO Public
Capacity of CAISO RA import in year 2019

Areas:
- NWPP-NW: Northwest
- NWPP-NP: NEVP+PACE
- NWPP-BT: BANC+TIDC
- Non-NWPP: Not from NWPP

“NWPP-”: NWPP excluding CA BAAs

From NWPP-NP
Very small, can hardly be seen on the chart

Maybe from NWPP-NP

Limit
Total Capacity
Headroom
~3,000 MW
~800 MW

Capacity from NWPP-

See also Usage on Slide 18 and Slide 19
Capacity of CAISO RA import in winter time
During NWPP’s winter peak in 2019

NWPP net load (MW)

Capacity of CAISO RA import (MW)

Dec 18, 2019 5pm

Capacity of CAISO RA import in winter time
During NWPP’s winter peak in 2019

See also Usage on Slide 20
Capacity of CAISO RA import in summer time
During NWPP’s summer peak in 2019

NWPP net load (MW)

Capacity of CAISO RA import (MW)

Limit Total Capacity Total Limit

~800 MW ~3,000 MW

Mon, Sep 2 Tue, Sep 3 Wed, Sep 4 Thu, Sep 5 Fri, Sep 6 Sat, Sep 7 Sun, Sep 8

See also Usage on Slide 21
"Usage" of CAISO RA import

[Note] Details of interchange schedules are commercially sensitive information. To protect confidentiality, this analysis describes aggregated data.
Usage of CAISO RA import in 2019

CAISO RA import (MW) in 2019

See also Capacity on Slide 13
Usage of CAISO RA import in 2019 – Detailed breakdown

CAISO RA import (MW) in 2019

Areas:
- NWPP-NW: Northwest
- NWPP-NP: NEVP+PACE
- NWPP-BT: BANC+TIDC
- Non-NWPP: Not from NWPP

“NWPP-”: NWPP excluding CA BAAs

See also Capacity on Slide 13
Usage of CAISO RA import in winter time

During NWPP’s winter peak in 2019

NWPP net load (MW)

Dec 18, 2019 5pm

See also Capacity on Slide 14
Usage of CAISO RA import in summer time
During NWPP’s summer peak in 2019

NWPP net load (MW)

Usage of CAISO RA import (MW)

See also Capacity on Slide 15
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Putting it all together

RA import 1 of 4: From NWPP-NW (Northwest)

Amount of contracted RA import is significant
Limited headroom is left
Putting it all together Cont’d

RA import 2 of 4: From NWPP-BT (BANC+TIDC)

CAISO RA import: Limit-Capacity-Usage

Usage data from 2015 to 2017 are not available

Headroom for possible more RA capacity to be contracted

蠕冬 2,073 1,696 1,121 1,123 1,057

蠕冬 2015 2016 2017 2018 2019

Amount of contracted RA import is insignificant
A lot of headroom is still available
Putting it all together Cont’d

RA import 3 of 4: From NWPP-NP (NEVP+PACE)

These contracts come either from NWPP-NP or Non-NWPP
Imagine X% of these contracts comes from NWPP-NP
That portion shall be added to the charts on the left

Amount of contracted RA import is insignificant
Headroom is still available
Putting it all together  
RA import 4 of 4: From Non-NWPP (Other area)

These contracts come either from NWPP-NP or Non-NWPP. Imagine Y% of these contracts come from Non-NWPP. That portion shall be added to the charts on the left.

Headroom for possible more RA capacity to be contracted:

Amount of contracted RA import is significant. Headroom is still available.
This work reviewed multi-year historical data of CAISO RA import. “Limit”, “Capacity” and “Usage” are investigated. Historical patterns and trends are analyzed. Breakdown is shown for portions of RA export from NWPP to CAISO.

Past-years’ historical data do not necessarily reflect future trends. Caution shall be exercised when extrapolating data into future years.
THANK YOU

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