



# Decision on ISO 2019-2020 Transmission Plan

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Board of Governors Meeting

General Session

March 25, 2020

## Approving the plan means approving determinations and recommendations contained in the plan

- 9 transmission projects identified as needed:
  - 9 reliability-driven projects totaling \$141.7 million
  - 7 of the 9 projects, totaling \$87.7 million, were approved by ISO Management as a part of the 2019-2020 transmission planning process
- 3 previously approved projects are on hold and require further evaluation in future planning cycles
- No policy-driven projects
- No economic-driven projects
  - one project already found to be needed for reliability needs is recommended to be advanced for economic benefit reasons

# 2019-2020 Transmission Planning Process

December 2018

April 2019

March 2020

## Phase 1 – Develop detailed study plan

State and federal policy  
CEC - Demand forecasts  
CPUC - Resource forecasts and common assumptions with procurement processes  
Other issues or concerns

## Phase 2 - Sequential technical studies

- Reliability analysis
  - Renewable (policy-driven) analysis
  - Economic analysis
- Publish comprehensive transmission plan with recommended projects

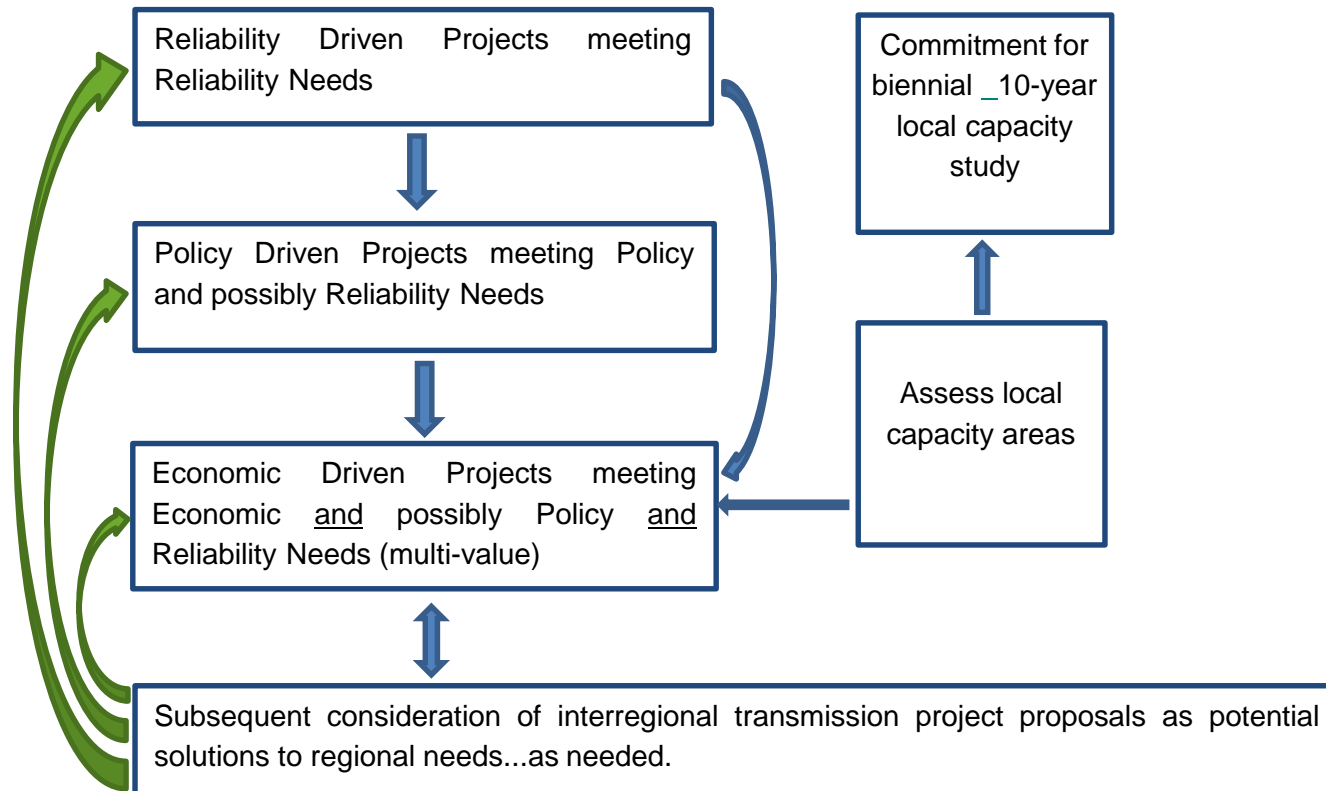
## Phase 3 Procurement

ISO Board for approval of transmission plan

# Emphasis in transmission planning cycle

- A modest capital program, as
  - Reliability issues are largely in hand
  - Policy work considered portfolios submitted by CPUC of “42 MMT scenario” baseline and sensitivity studies.
  - Very little economic-driven opportunity, largely due to status of IRP decision making and need to retain the gas fleet.
- Significant interest in development community for transmission lines and storage proposals for major facilities needing detailed economic analysis.
- Continued “special” study efforts on local capacity areas and gas-fired generation requirements.

# Studies are sequentially coordinated as a part of the transmission planning process



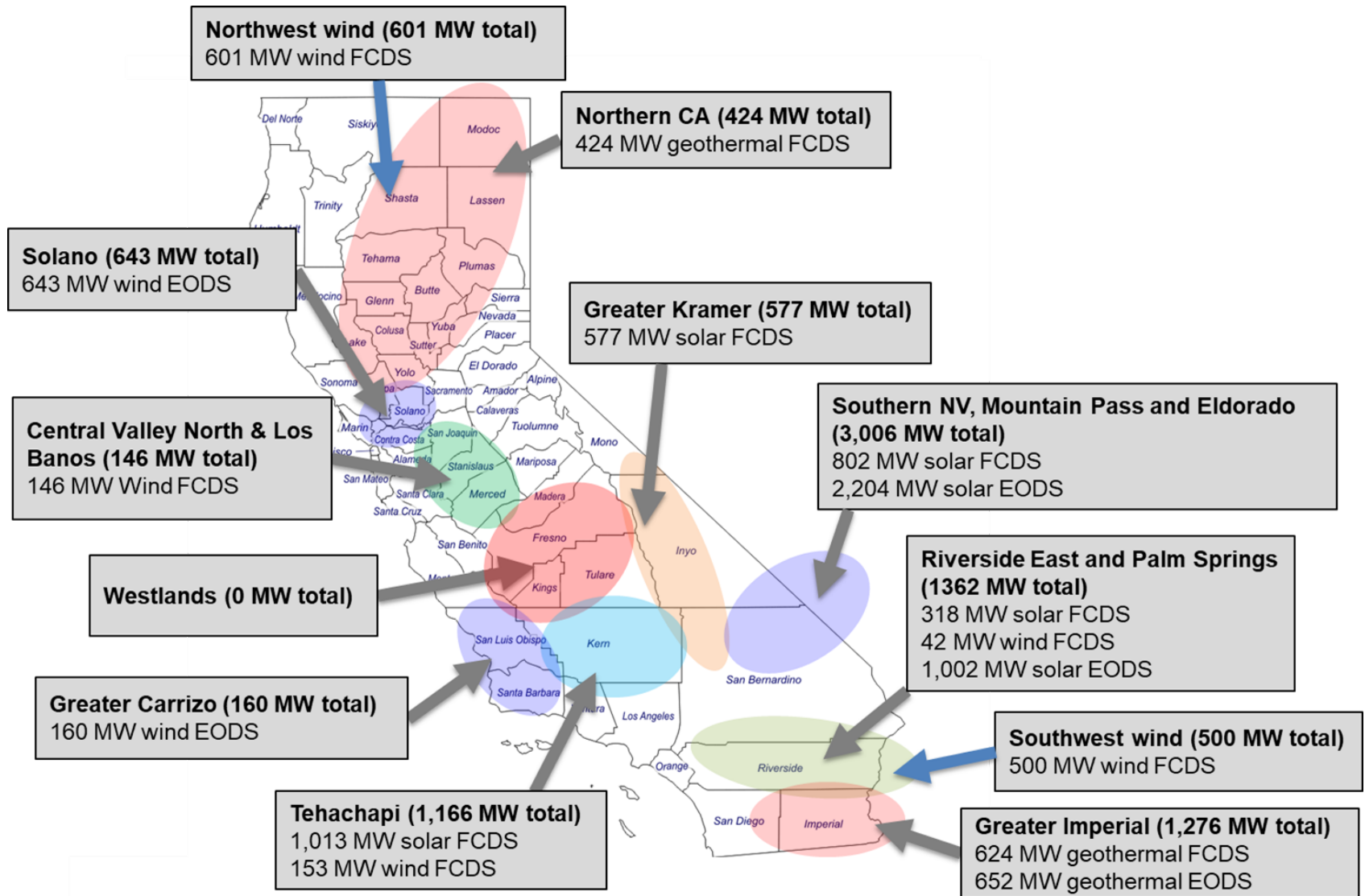
# The ISO's reliability analysis led to the following:

- 9 new reliability projects of approximately \$141.7 million
  - 7 projects in PG&E service territory totaling \$120.7 million
  - 1 project in VEA/GLW service territory totaling \$5 million
  - 1 projects in SCE service territory totaling \$16 million
- 7 of the 9 projects totaling \$87.7 million were approved by ISO Management as a part of the 2019-2020 transmission planning process.
- Three previously approved projects in PG&E service territory are recommended to be on hold for further review in future cycles.

## Policy-driven analysis

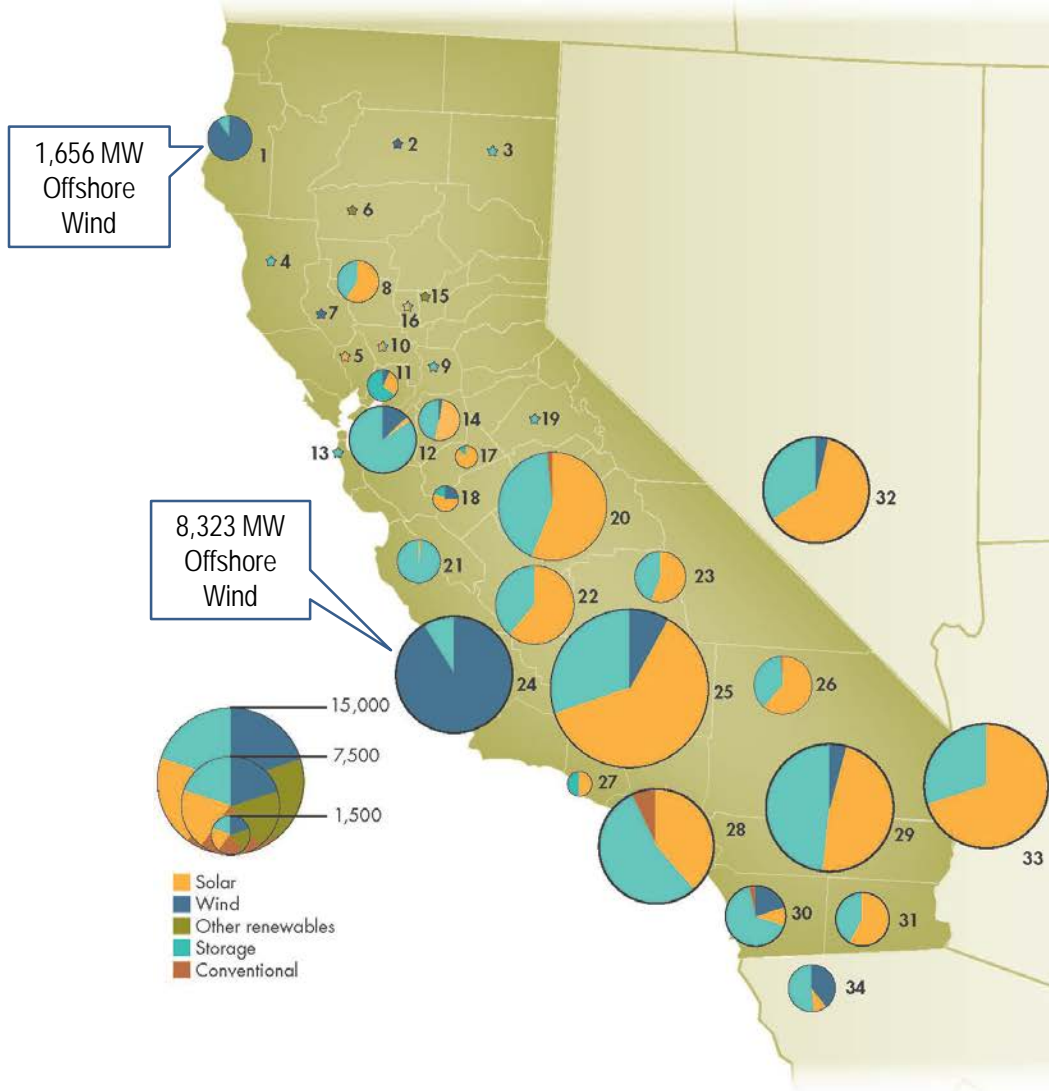
- CPUC's 2017-2018 Integrated Resource Planning cycle provided resource planning assumptions to the ISO:
  - Base portfolio based on its “42 MMT scenario” that results in approximately a 60 percent RPS, and
  - Two sensitivity portfolios resulting in approximately a 71% percent RPS.
- The ISO performed policy-driven study assessments of the 42 MMT scenario and did not identify any new Category 1 policy-driven transmission needs.
- Sensitivity analyses showed significant potential curtailments, raising potential for economic-driven needs, if not policy-driven
- The ISO is not recommending any new transmission solutions at this time for policy purposes.

# Generic resources included in CPUC base portfolio:





# Queue Map – Conventional & Renewables – July 24, 2019



Interconnection queue by county

County	# of Projects	Megawatts			Total
		Renewables	Storage	Conventional	
1 Humboldt	6	1910	201		2,110
2 Shasta	1	200			200
3 Lassen	2	21	27		48
4 Mendocino	1		31		31
5 Napa	1	30			30
6 Tehama	2	6			6
7 Lake	3	145	39		184
8 Colusa	9	1,198	825		2,023
9 Sacramento	1		59		59
10 Yolo	2	12	12		24
11 Solano	5	454	821		1,275
12 Alameda-Contra Costa-Santa Clara	24	634	3,510		4,144
13 San Francisco	1		250		250
14 San Joaquin	14	994	862		1,857
15 Yuba	1	6			6
16 Sutter	2	100	100		200
17 Stanislaus	7	657	108		765
18 Merced	12	833	200		1,033
19 Tuolumne	1		10		10
20 Fresno-Madera	45	4,734	3,562	123	8,419
21 San Benito-Monterey	6	30	1,867		1,898
22 Kings	24	3,443	2,176		5,619
23 Tulare-Inyo	13	1,285	1,014		2,299
24 San Luis Obispo	11	8,994	856		9,850
25 Kern	81	11,633	5,022		16,655
26 San Bernardino	24	2035	1,232	38	3,306
27 Ventura	2	500	500		1,000
28 Los Angeles-Orange	28	3,893	5,469	700	10,062
29 Riverside	38	6,223	5,761		11,984
30 San Diego	35	1,233	2,709	141	4,082
31 Imperial	13	1,837	1,337		3,175

In-state Totals	415	53,041	38,560	1,002	92,604
32 Nevada	28	5,235	2,738		7,973
33 Arizona	24	7,383	3,157		10,540
34 Mexico	6	1,057	1,128		2,185
Out-of-state Totals	58	13,675	7,023		20,698
<b>TOTAL ALL PROJECTS</b>	<b>473</b>	<b>66,716</b>	<b>45,583</b>	<b>1,002</b>	<b>113,301</b>

# Economic-driven analysis

- In the economic assessment the ISO:
  - Received a number of economic study requests, which included projects that would more reasonably be categorized as interregional transmission projects;
  - Received several proposed reliability projects that cited material economic benefits; and
  - Completed the expanded 10-year local capacity technical study initiated in the 2018- 2019 planning cycle exploring potential transmission upgrades
- No new projects were found to be needed as economic-driven projects in the 2019-2020 planning cycle
  - One project already found to be needed for reliability needs is recommended to be advanced for economic benefit reasons.
  - One project in Contra Costa LCR subarea will be continue to be assessed as a part of the annual LCR analysis – and may be brought for approval in at a future Board of Governors meeting.

# New Projects Recommended for Approval

Projects approved by ISO Management in the 2019-2020 transmission planning process:

Projects	PTO	Project costs (millions)	Comments
Tulucay-Napa #2 60 kV Line Capacity Increase	PG&E	\$5-\$10	Reliability
East Shore 230 kV Bus Terminals Reconfiguration	PG&E	\$2-\$4	Reliability
Newark 230/115 kV Tran7 of the 9 projects totaling \$87.7 million were approved by CAISO management as a part of transmission planning process sformer Bank #7 Circuit Breaker Addition	PG&E	\$3-\$6	Reliability
Moraga 230 kV Bus Upgrade	PG&E	\$17	Reliability
Wilson-Oro Loma 115kV Line Reconductoring	PG&E	\$11.3-\$22.7	Reliability
Borden 230/70 kV Transformer Bank #1 Capacity Increase	PG&E	\$11.5-\$23	Reliability
Gamebird 230/138 kV Transformer Upgrade	VEA/GLW	\$5	Reliability

Projects recommended for approval in the 2019-2020 Transmission Plan:

Projects	PTO	Project costs (millions)	Comments
Salinas-Firestone #1 and #2 60 kV Lines	PG&E	\$19-\$38	Reliability
Pardee-Sylmar 230 kV Line Rating Increase Project	SCE	\$16	Reliability (with economic benefits)

# Previously Approved Projects Recommended to be on Hold

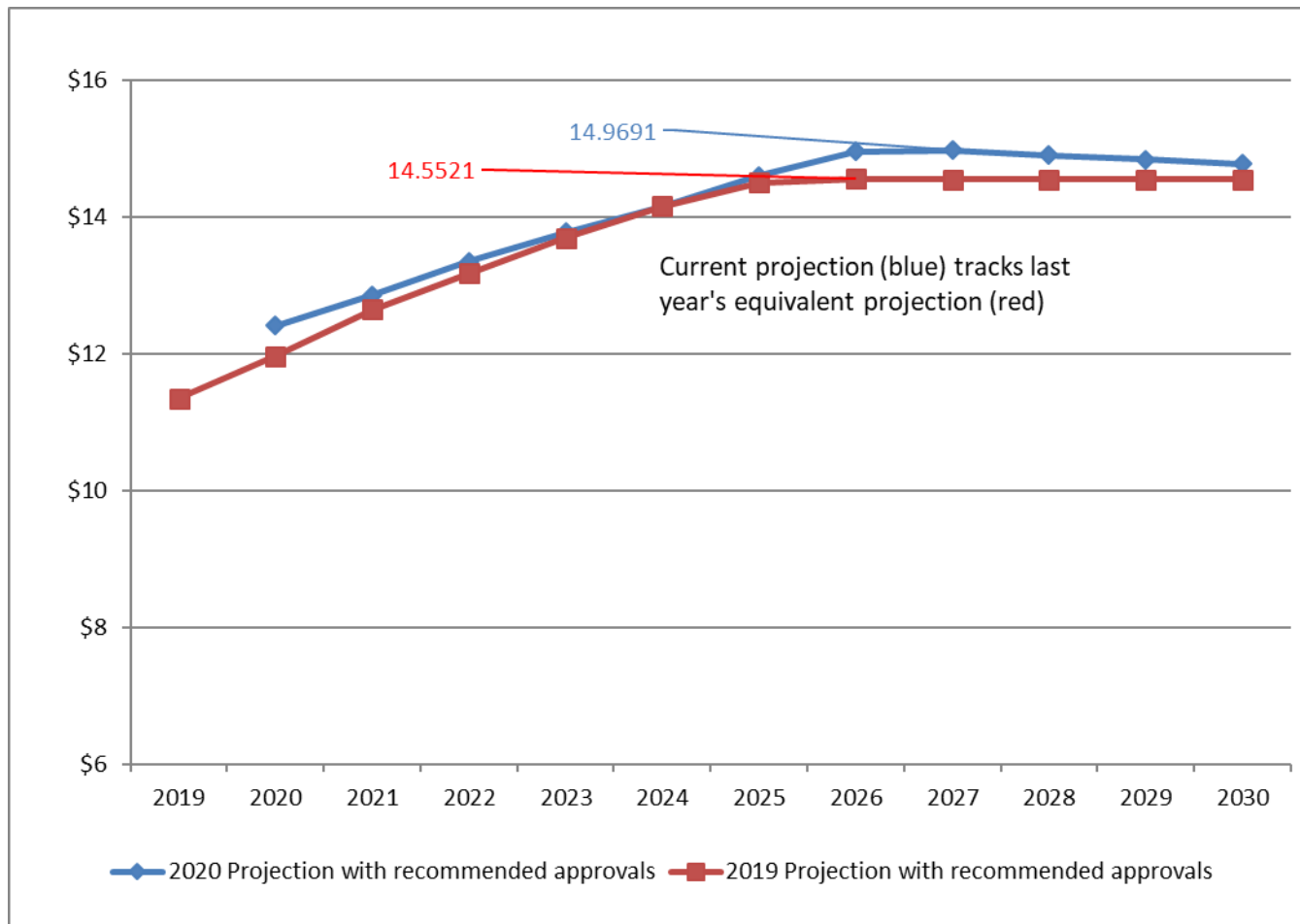
Projects	PTO	Comment
North of Mesa Upgrades	PG&E	On hold
Moraga-Sobrante 115 kV Line Reconductor	PG&E	On hold
Wheeler Ridge Junction Station Project	PG&E	On hold

## Other Informational Studies

- As in past transmission planning cycles, the ISO undertook additional informational studies to help inform future transmission planning or resource procurement processes:
  - Frequency response and dynamic system modeling
  - Reliance on gas-fired generation in local capacity Areas
  - Flexible capacity deliverability requirements

# Regional high voltage transmission access charge projection trending from January 1, 2020 values:

Regional High Voltage TAC \$/MWh



# Stakeholder feedback

- General support for much of the transmission plan
- Concerns with CPUC portfolios used for planning
- Requests for further consideration of alternatives submitted
- Concerns with respect to potential renewable generation curtailment
- Concerns with PTO capital maintenance projects
  - PG&E capital maintenance plans in Oakland area

# Management recommends the Board approve the 2019-2020 ISO Transmission Plan

- Continues to pursue low emission strategies in addressing reliability needs of the ISO controlled grid
- Sets a foundation for higher renewable energy goals
- Provides for prudent and economic development of the transmission system



Management proposes the following motion:

**Moved, that the ISO Board of Governors approves the ISO 2019-2020 transmission plan attached to the memorandum dated March 18, 2020.**