

2021 Power Marketing Initiative

Pick-Sloan Missouri Basin Program--Eastern Division

Western Area Power Administration

November-December 2010



Welcome

- ▶ **Jody Sundsted**, Power Marketing Manager
- ▶ **Doug Hellekson**, Contracts and Energy Services Manager
- ▶ **John Pankratz**, 2021 Power Marketing Initiative Project Manager
- ▶ **Mike Radecki**, Energy Services Specialist



Meeting Purpose

- ▶ Preparing for Formal Public Process – 2021 Power Marketing Initiative (PMI)
 - Firm Electric Service contracts expire on **December 31, 2020**
 - Describe and discuss key marketing plan principles
 - Government-to-Government Native American consultation
 - Opportunity for customer input



Agenda

- ▶ Overview of Western
- ▶ Overview of Upper Great Plains Region
- ▶ Marketing Plan History
- ▶ Key 2021 PMI Principles
- ▶ Next Steps
- ▶ 2021 PMI Website



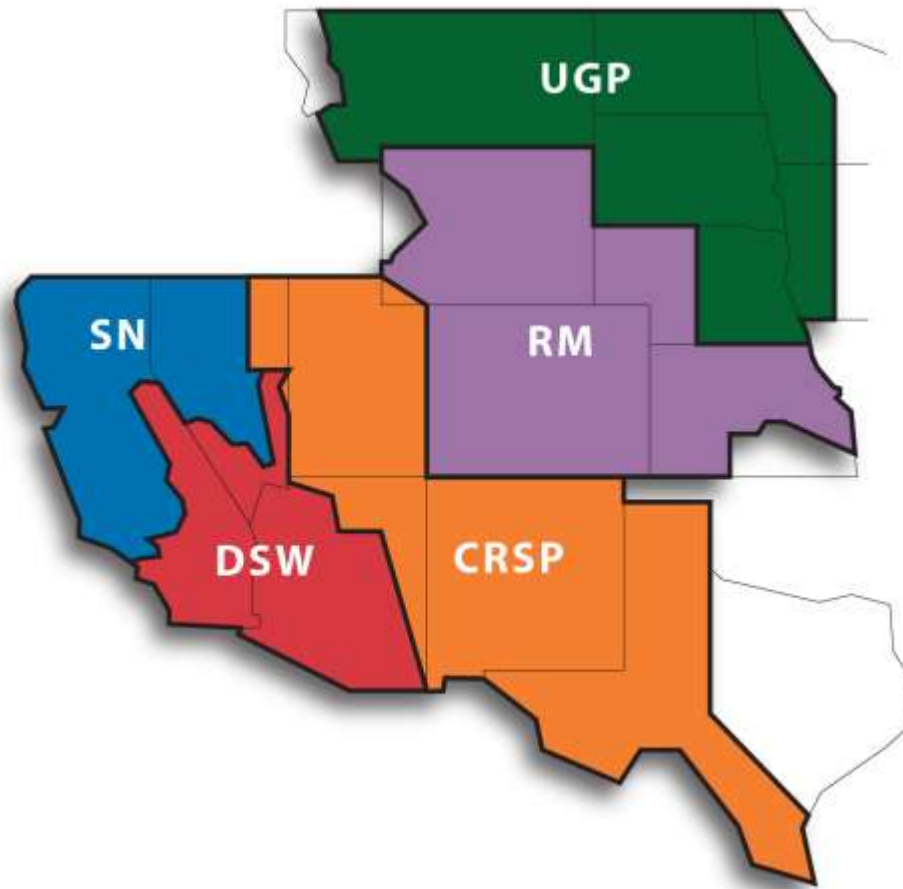
Overview of Western

Mission: Market and deliver clean, renewable, reliable, cost-based Federal hydroelectric power and related services

Vision: Provide premier power marketing and transmission services

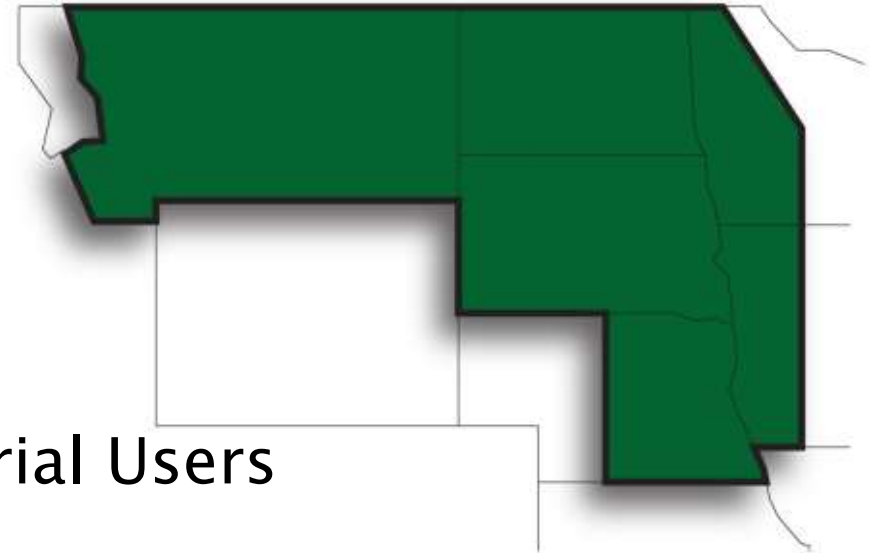


Western Today



Upper Great Plains Region

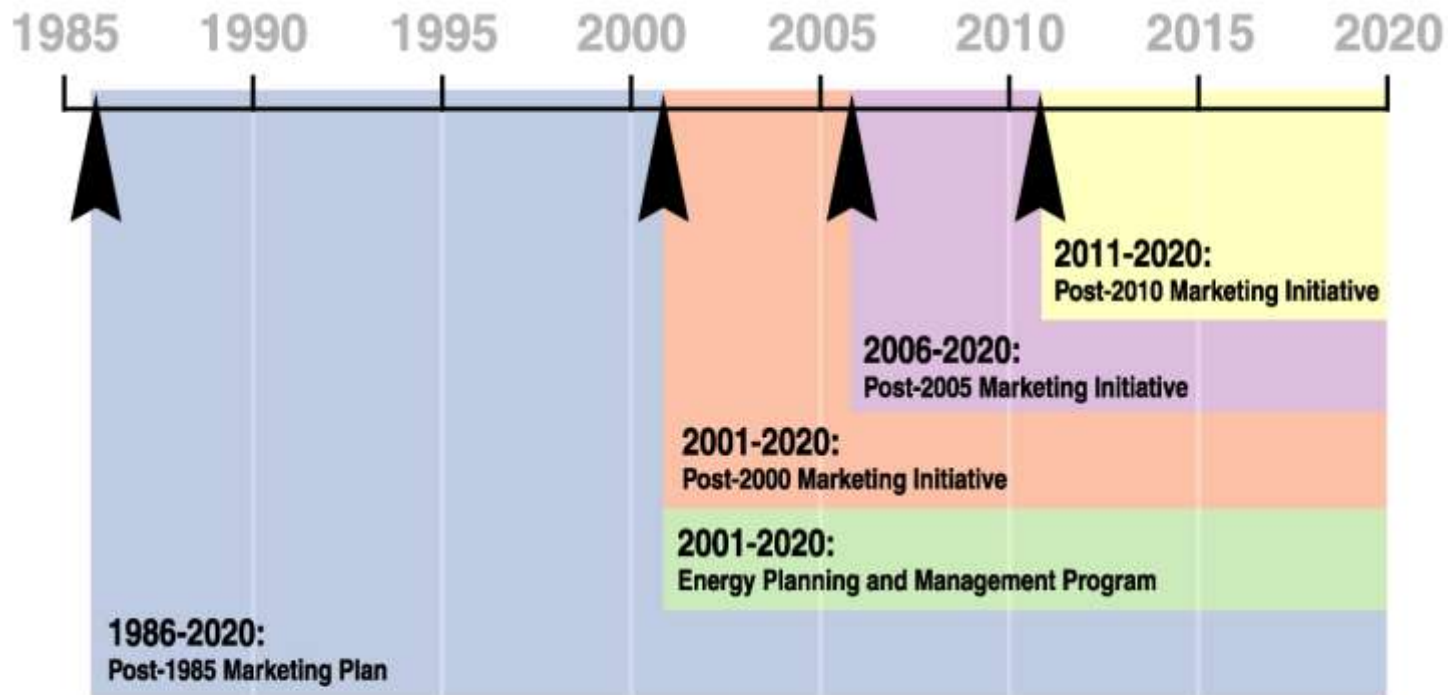
Pick-Sloan Missouri Basin Program--Eastern Division



- Irrigation Districts
- Municipal, Rural, and Industrial Users
- Municipalities
- Native American Tribes
- Public Power Districts
- Rural Electric Cooperatives
- State and Federal Agencies



Marketing Plan History



1985 Marketing Plan

- ▶ Extended long-term commitments to existing customers and allocated power to 34 new customers through December 31, 2000
- ▶ Established the Conservation and Renewable Energy (C&RE) Program
- ▶ Marketable capability and energy based on U.S. Army Corps of Engineers' study



Energy Planning and Management Program (EPAMP)

- ▶ **Part 1 – Integrated Resource Planning (IRP)**
 - Replaced C&RE Program with IRP Planning
- ▶ **Part 2 – Power Marketing Initiative (PMI)**

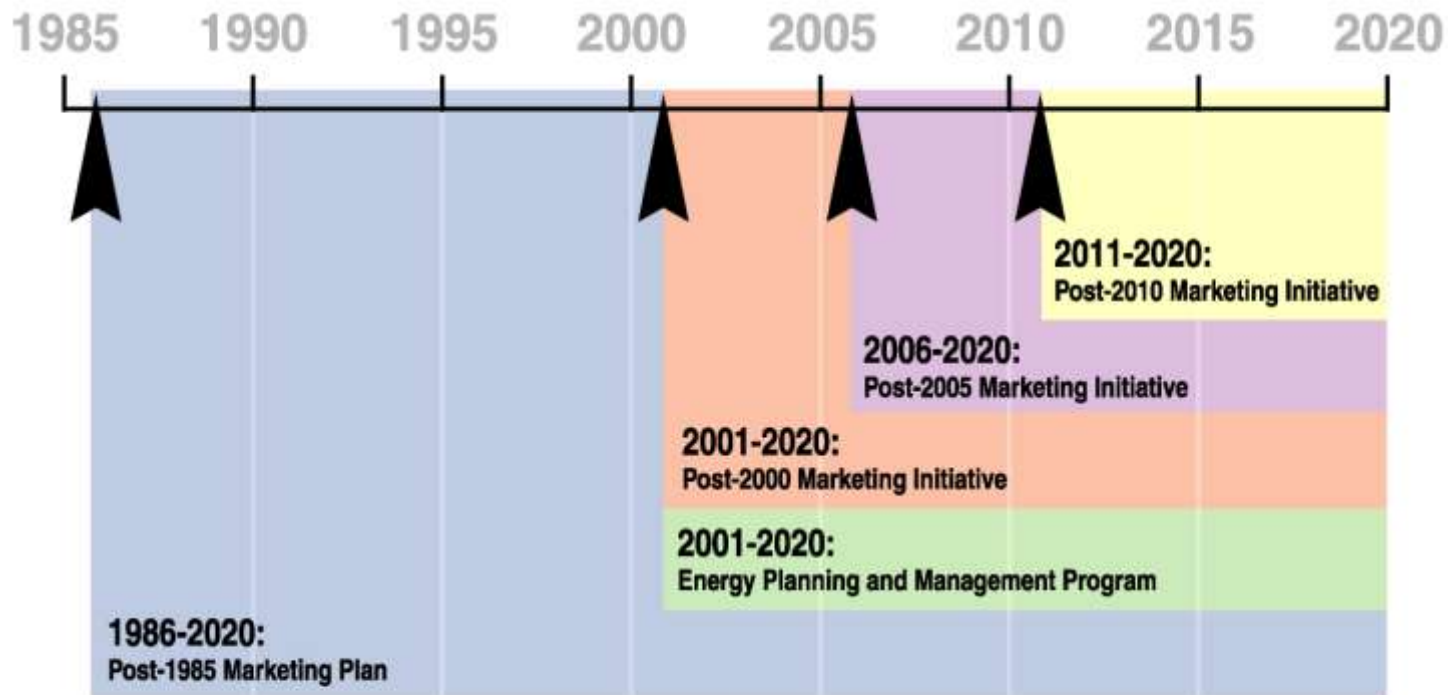


EPAMP PMI

- Provided the framework for marketing power for all Western Regions
- Upper Great Plains Region
 - Extended and amended existing 1985 Marketing Plan
 - Made commitments initially to existing customers at 96 percent of the marketable resource
 - Resource Pools – new customers
 - Native American tribes– utility status waived
 - Contract term through December 31, 2020



Marketing Plan History



Why are we planning now?

- ▶ Western's decisions are critical to our customers' ability to "keep the lights on"
- ▶ Western recognizes the need to engage customers early in this 2021 PMI process
 - Long-range planning requirements





**UGPR
MARKETING
PLAN**

**1985
MARKETING
PLAN**

**ENERGY PLANNING &
MANAGEMENT
PROGRAM**

**POST
2000**

**POST
2005**

**POST
2010**

Introduction to Key 2021 PMI Principles

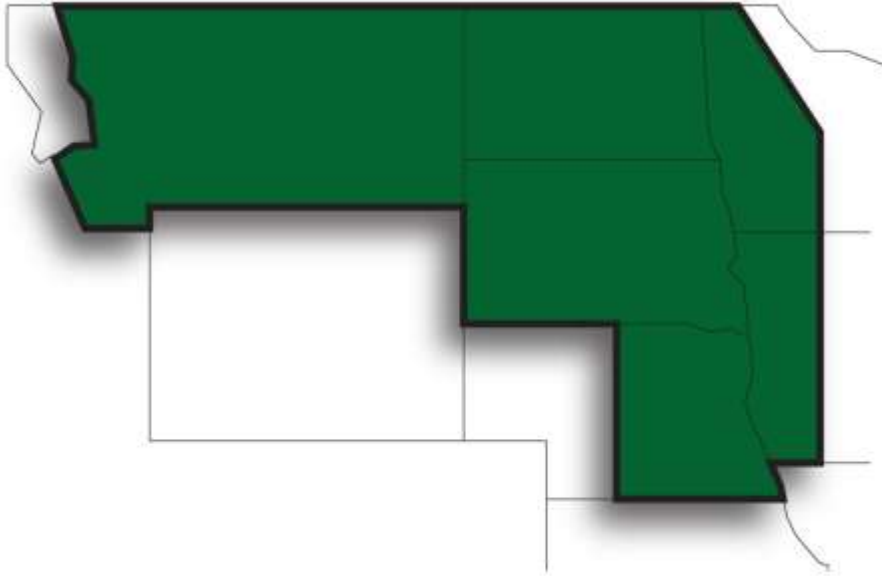
1. Marketing Area
2. Contract Term
3. Resource Pools
4. Marketable Resource
5. Load Factor Limit and Withdrawal Provisions
6. Marketing Future Resources



Marketing Area

(Principle 1 of 6)

▶ Current Plan



The marketing area of the P-SMBP--ED is Montana (east of the Continental Divide), all of North Dakota and South Dakota, Nebraska east of the 101° meridian, Iowa west of the 94½° meridian, and Minnesota west of a line on the 94½° meridian from the southern boundary of the state to the 46° parallel and then northwesterly to the northern boundary of the state at the 96½° meridian



Marketing Area

▶ Background

- The current marketing area for existing resources was established in 1953 and confirmed in subsequent public processes



Marketing Area

- ▶ **2021 PMI Consideration**

- Carry forward the marketing area from the current marketing plan



Contract Term

(Principle 2 of 6)

▶ Current Plan

- 1985 Marketing Plan – Contract term through December 31, 2000
- EPAMP – Contracts were extended for 20 years and expire on **December 31, 2020**



Contract Term

▶ Background

- Contract/Marketing Plan term needs to strike a balance between customers' need for stability in resource planning and Western's need for flexibility
- Boulder Canyon Project (Desert Southwest Region) current contracts are for 30 years and are proposing a new marketing plan for 30 years



Contract Term

▶ 2021 PMI Consideration

- Use a 30-year contract term for the 2021 PMI
 - Customers – stability
 - Western – flexibility
 - Resource pools
 - Withdrawal provisions



Resource Pools

(Principle 3 of 6)

▶ Current Marketing Plan (EPAMP)

- One initial resource pool – 4 percent of marketable resource
- Two additional resource pools at 5–year intervals of up to 1 percent of the marketable resource under contract at the time. Size of additional pool is determined by Western based on the actual fair–share needs to eligible new customers and other appropriate purposes (up to 1 percent)



Resource Pools

▶ Background

- Flood Control Act of 1944 – Widespread Use
 - 1954 thru 1985 – New Customers
 - 1985 Marketing Plan – 34 new customers
 - EPAMP – New Customers – Resource Pools
 - General Eligibility Criteria
 - General Allocation Criteria
 - General Contract Principles



EPAMP – 3 Resource Pools

	Post-2000	Post-2005	Post-2010
Resource Pool Amount	4%	Up to 1%	Up to 1%
Actual Reduction	4%	Summer 0.16%, Winter 0.21%	None
Eligible To	New Customers	New Customers, Other Appropriate Purposes	New Customers, Other Appropriate Purposes
Allocations Made	11 Municipals 25 Native American Tribes	2 Municipals 1 State Agency	1 Municipal
Other Appropriate Purposes	N/A	No	No

Resource Pools

▶ 2021 PMI Considerations

- Resource pool of up to 1 percent of the marketable resource under the contract at the time for new preference entities at the beginning of the contract term and again every 10 years (2021, 2031, 2041)
- Resource pools only for new customers

Customer Input for 2021 PMI

▶ Marketing Area

- Consider carrying forward the marketing area from the current marketing plan

▶ Contract Term

- Consider using a 30-year contract term for the 2021 PMI

▶ Resource Pools

- Consider resource pool of up to 1 percent of the marketable resource under contract at the time for new preference entities at the beginning of the contract term and again every 10 years (2021, 2031, 2041)
- Consider resource pools only for new customers



Marketable Resource – Key Terms

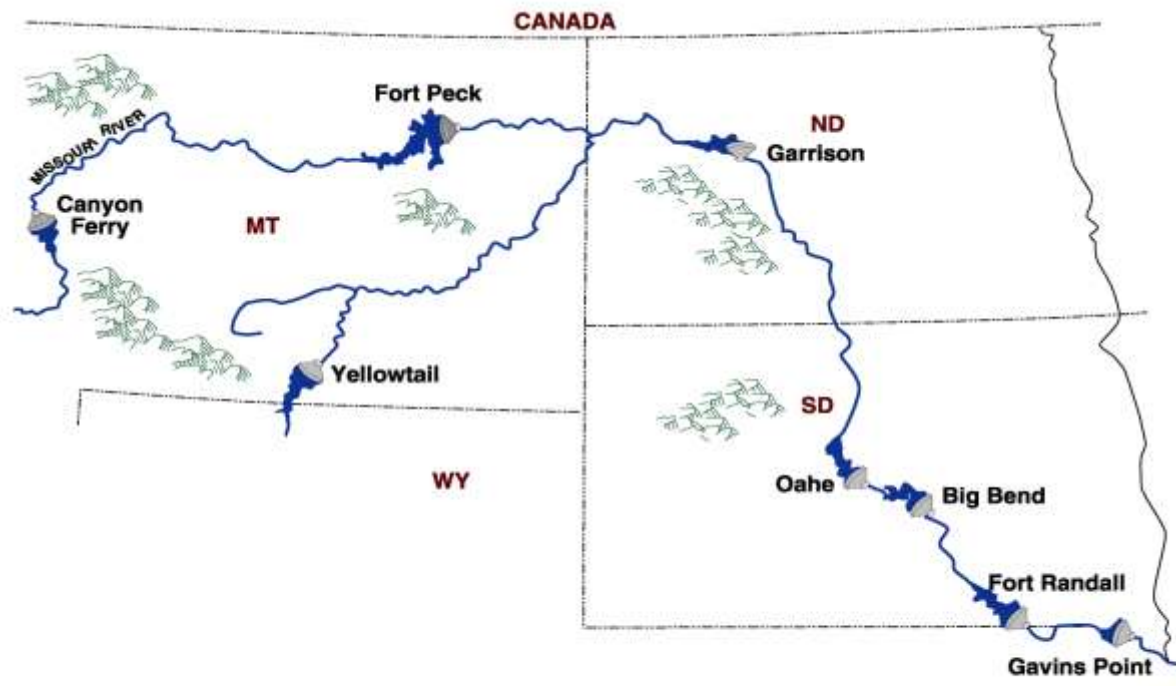
(Principle 4 of 6)

- ▶ **Capability** – the estimated peak generation in a given timeframe (MW)
- ▶ **Decile** – statistical representation of the upper or lower 10% of data
- ▶ **Depletions** – the removal of water from the reservoir system for municipal, industrial, or rural uses
- ▶ **Quartile** – statistical representation of the upper or lower 25% of data
- ▶ **Sedimentation** – natural buildup of sediment behind the dams



Marketable Resource

- ▶ Where Western gets power



Marketable Resource

- ▶ Key components of the 1985 Marketing Plan
Marketable Capability Methodology
 - Capability:
 - Concept was to market to an adverse water inflow condition with managed risk
 - Based on 1961 inflows
 - 2nd most adverse water inflow year (excluding 1934 – 1942)
 - Energy:
 - Concept was to market energy at the approximate median forecast annual generation
 - Water years considered included 1898 to 1979



Marketable Resource

- ▶ 2021 PMI – evaluated the potential marketable capability (MW)
 - Considered 1985 Marketing Plan method of adverse capability
 - 2nd most adverse water year – now 1988 (excluding 1934 – 1942)
 - Results were mixed as lower ranked adverse inflow water conditions didn't always correlate to same capability level, for example:
 - 2nd adverse water year (1988) produced more marketable capability (MW) than the 3rd adverse water year (1961) – 2,205 MW vs. 2,132 MW respectively
 - 1993, an excellent water year, also provided less capability than the 2nd adverse year (1988)



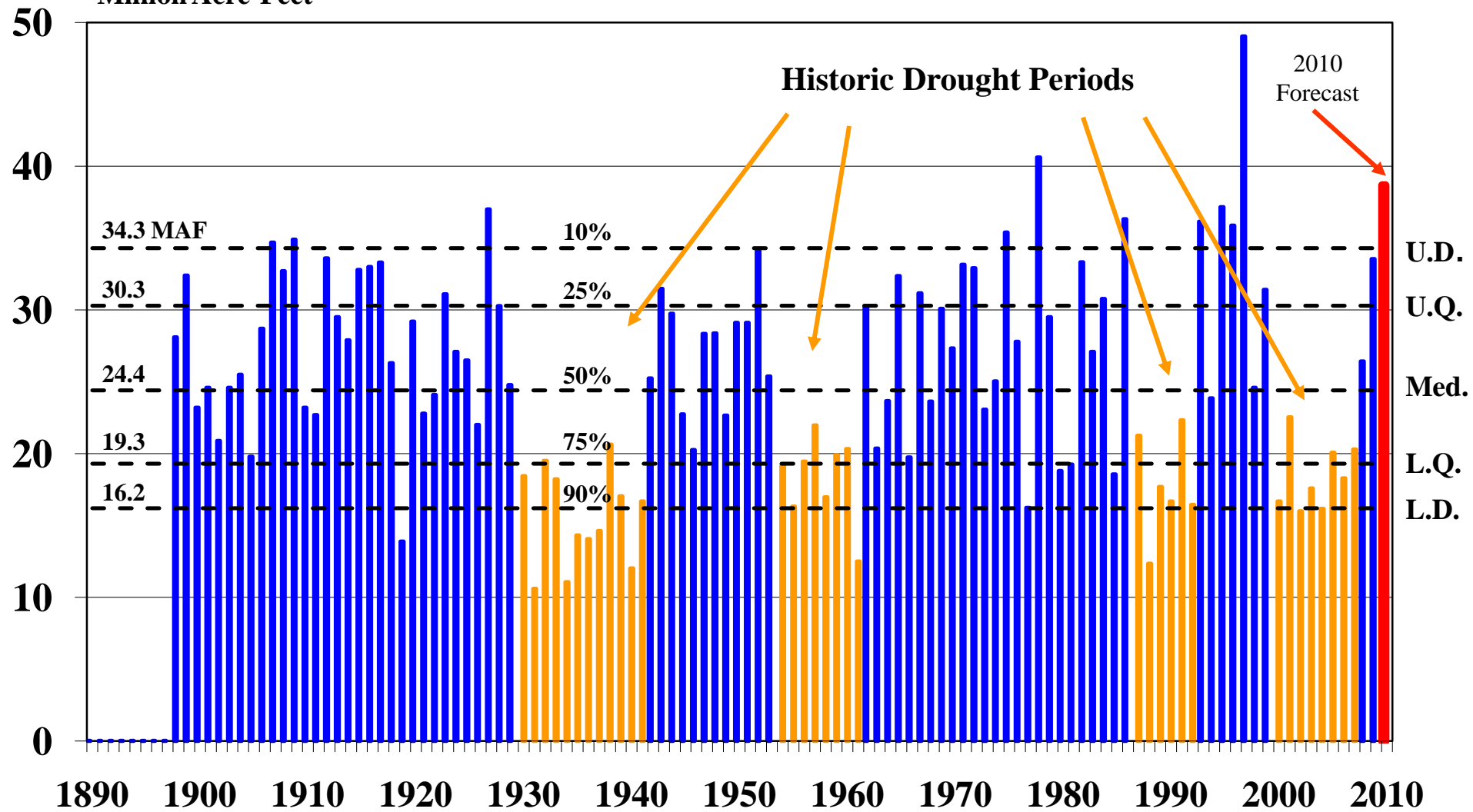
Marketable Resource

- ▶ Discussion of marketable capability methodology
 - Marketable capability (MW) is ultimately based on Adverse Storage Condition and inflow, with Reservoir Management (to meet Corps's Master Manual objectives), taking precedent
 - Risk is driven by the occurrence of several years of at or near lower decile inflows
 - Analysis of 113 years of historical annual inflows revealed:
 - 26 periods/sequences of at least 3 years of at or near lower decile inflow



Missouri River Mainstem Annual Runoff at Sioux City, Iowa

Million Acre-Feet

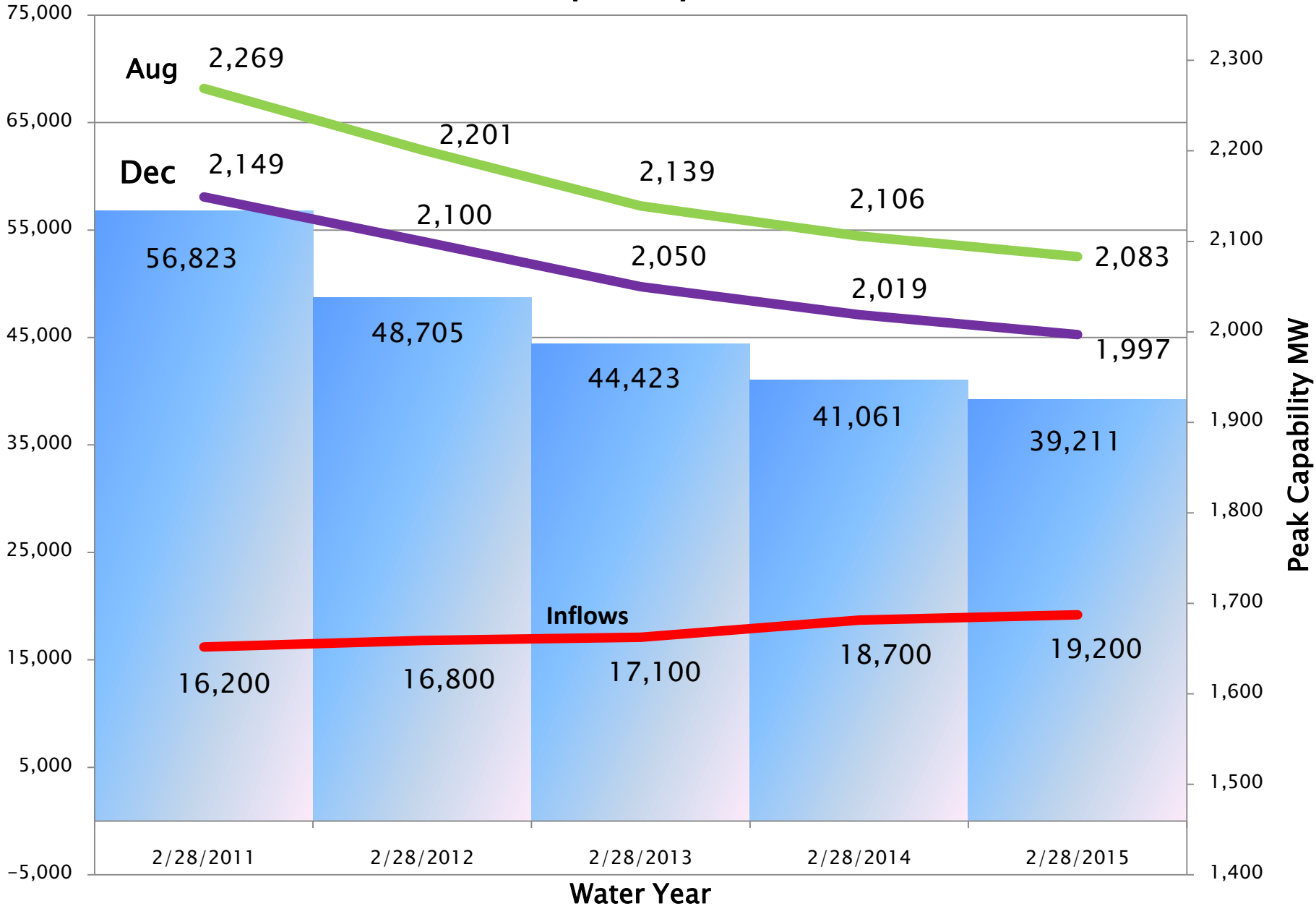


Marketable Resource

- ▶ Preliminary Marketable Capability Level
 - Considered utilizing a 5-year forecast of lower decile/quartile runoff
 - Utilize U.S. Army Corps of Engineers' Annual Operating Plan which incorporates current reservoir management practices



5- Year Forecast Lower Decile/Quartile Runoff Peak Capability (Mainstem)



Marketable Resource Capability / Obligation

Preliminary 2021 Forecast as of November 2010

5th Year Adverse Storage Condition

Resources	<u>Aug MW</u>	<u>Dec MW</u>
Main Stem	2,083	1,997
Canyon Ferry + ½ Yellowtail	198	198
Southwest Power Authority Diversity	25	25
P-SMPB--ED Capability	2,306	2,220
Less Obligations		
Plant Use	(5)	(9)
Planning Reserves	(257)	(245)
Project Use / Irrigation	(37)	(1)
MR&I	(13)	(4)
Capability for Firm	1,994	1,961
Existing Firm Obligations	(2,014)	(1,983)
Losses	(112)	(113)
Diversity	117	111
Difference	(15)	(24)
Future Unknowns		
Final Corps/BOR Studies (including plant upgrades)	??	??
MR&I Development	??	??

Comparison of Preliminary Marketable Capability Level to the 2000 to 2007 Drought

- ▶ The 2000 to 2007 drought:
 - 2000 started with a full pool (57 MAF)
 - 2000 through 2007, 8 years of lower decile to lower quartile inflow
- ▶ Capability (MW) “tight”
- ▶ If 2000 to 2007 conditions repeated in 2021 and we started with a full pool:
 - Capability would be tight but likely met in years 4 through 8 of the drought

Marketable Resource

▶ Marketable Energy

- Historically, Western has marketed energy at the approximate median forecast annual generation
- Western believes this methodology is still appropriate for the 2021 PMI



Marketable Resource

- ▶ Marketable Energy (cont.)
 - Current study forecast for annual median energy in 2020 is 10,200 GWH (Mainstem and Bureau of Reclamation)
 - Based on 1930 through 2002, current depletion levels and existing sedimentation data
 - Sedimentation data for the three larger reservoirs have not been updated in approximately 25 years
 - Saleable energy after adjusting for transmission losses, plant-use, etc. is approximately 9,085 GWH



Marketable Resource

Marketable Energy Comparison

Marketable Energy Comparison

<u>Energy (GWH)</u>	<u>Summer</u>	<u>Winter</u>	<u>Annual</u>
Saleable Energy from 2020 Model 1/	5,254	3,832	9,085
Actual Energy Billed 2008 2/	4,251	4,740	8,990
Difference	1,003	-908	95

1/ 2050 modeled energy will decrease by approximately 100 GWH

2/ Maximum energy year since 1998

<u>Energy (GWH)</u>	<u>Summer</u>	<u>Winter</u>	<u>Annual</u>
Salable Energy from 1985 Model Estimated for 2000	5,035	3,939	8,974
Actual Energy Billed 1979 1/	3,790	4,391	8,181
Difference	1,245	-452	793

1/ Derived from load factor and estimated seasonal demand in 1979



Comparison of Preliminary Marketable Energy to the 2000 to 2007 Drought

- ▶ The 2000 to 2007 drought:
 - 2000 started with a full pool (57 MAF)
 - 2000 through 2007, 8 years of lower decile to lower quartile runoff
 - Short energy throughout the entire drought
 - As much as 50 percent in 2007 and 2008
- ▶ If 2000 to 2007 conditions repeated in 2021 and we started with a full pool:
 - Energy would be short starting in year 2 by approximately 20 percent worsening to conditions similar to those experienced in 2000 to 2007 (40 percent to 50 percent of required generation)



Customer Input for 2021 PMI

▶ **Marketable Resource**

◦ **Capability**

- Consider adverse condition to determine the marketable capability
 - Withdrawal provisions provide risk management
- Consider extending current Contract Rates of Delivery to all firm power customers (adjusted by up to 1 percent for new resource pool in 2021)

◦ **Energy**

- Consider carrying forward marketing energy at the approximate median forecast annual generation
- Consider carrying forward providing energy at system load factor for as long as possible



Load Factor Limit and Withdrawal Provisions (Principle 5 of 6)

▶ Load Factor Limit

◦ Current Marketing Plan

- Western markets power at system load factors for as long as possible and reserves the right for Western, with 3 years advance notice, to limit monthly load factors to 70 percent

Load Factor Limit and Withdrawal Provisions

▶ Load Factor Limit

◦ Background

- Load factor limit was first discussed in 1977
- Load factor limit was addressed under 1985 Marketing Plan due to a concern for growing customer load factors
- Western's actual summer and winter seasonal load factors and energy have increased over time
- Winter seasonal load factor exceeds energy availability, therefore Western purchases energy to meet customer energy obligations
- A reasonable monthly load factor limit, that could be implemented by season if needed, could reduce required energy commitments and help control energy costs over the contract term



Load Factor Limit and Withdrawal Provisions

▶ Load Factor Limit

◦ Background (cont.)

- Estimated impacts of a 70 percent load factor limit:

Load Factor Limit	Summer GWH Reduced	Number of Customers Impacted	Winter GWH Reduced	Number of Customers Impacted
70 percent	29	17	153	106

Load Factor Limit and Withdrawal Provisions

- ▶ **Load Factor Limit**

- **2021 PMI Consideration**

- Carry forward the load factor limit provision from the current marketing plan

Load Factor Limit and Withdrawal Provisions

▶ Project Use Withdrawal

◦ Current Plan

- Western shall reserve the right to reduce a customer's summer season contract rate of delivery by up to 5 percent for new project use (project pumping) requirements, by giving a minimum of 5 years written notice in advance of such action



Load Factor Limit and Withdrawal Provisions

▶ Project Use Withdrawal

◦ Background

- 1985 Marketing Plan
 - Withdrawal provision included to address future project pumping requirements
- This withdrawal provision allows Western to:
 - Withdraw power to meet new project use requirements, if needed
 - Flexibility over the contract term



Load Factor Limit and Withdrawal Provisions

- ▶ **Project Use Withdrawal**
 - **2021 PMI Consideration**
 - Carry forward the project use provision from the current marketing plan

Load Factor Limit and Withdrawal Provisions

- ▶ **Hydrology and River Operations Withdrawal**
 - **Current Plan**
 - Western, at its discretion and sole determination, reserves the right to adjust the contract rate of delivery on 5 years' written notice in response to changes in hydrology and river operations. Any such adjustments shall only take place after a public process by Western.



Load Factor Limit and Withdrawal Provisions

- ▶ **Hydrology and River Operations Withdrawal**
 - **Background**
 - EPAMP
 - Withdrawal provision added to the marketing plan to provide Western the flexibility to adapt to changes in hydrology and river operations
 - This withdrawal provision allows Western to:
 - Withdraw to meet changes in hydrology and river operations, if needed
 - Flexibility over contract term



Load Factor Limit and Withdrawal Provisions

- ▶ **Hydrology and River Operations Withdrawal**
 - **2021 PMI Consideration**
 - Carry forward the hydrology and river operations provision from the current marketing plan



Marketing Future Resources

(Principle 6 of 6)

▶ Current Plan

- Power resources may become available from various sources
- Western may elect to use power as needed
 - For example:
 - Acquire firming resources
 - Retain the power for operational flexibility
 - Sell the resources on a short-term basis
 - Allocate power



Marketing Future Resources

▶ Background

- This provision was utilized to provide an allocation to one new customer during the Post-2010 process



Marketing Future Resources

- ▶ **2021 PMI Consideration**
 - Carry forward the Marketing Future Resources provision from the current marketing plan

Customer Input for 2021 PMI

- ▶ **Load Factor Limit and Withdrawal Provisions**
 - Consider carrying forward the load factor limit, project use, and hydrology and river operations provisions from the current marketing plan
- ▶ **Marketing Future Resources**
 - Consider carrying forward the Marketing Future Resources provision from the current marketing plan



2021 PMI Consideration Summary

(1 of 3)

▶ **Marketing Area**

- Consider carrying forward the existing marketing area

▶ **Contract Term**

- Consider a 30-year contract term

▶ **Resource Pools**

- Consider resource pool of up to 1 percent of the marketable resource under contract at the time:
 - Every 10 years (2021, 2031, 2041)
 - New customers only



2021 PMI Consideration Summary

(2 of 3)

▶ **Marketable Resource**

◦ **Capability**

- Consider adverse condition to determine the marketable capability
 - Withdrawal provisions provide risk management
- Consider extending current Contract Rates of Delivery to all firm power customers (adjusted by up to 1 percent for new resource pool in 2021)

◦ **Energy**

- Consider carrying forward marketing energy at the approximate median forecast annual generation
- Consider carrying forward providing energy at system load factor for as long as possible



2021 PMI Consideration Summary

(3 of 3)

- ▶ **Load Factor Limit and Withdrawal Provisions**
 - Consider carrying forward the load factor limit, project use, and hydrology and river operations provisions from the current marketing plan

- ▶ **Marketing Future Resources**
 - Consider carrying forward the marketing future resources provision from the current marketing plan



2021 PMI Next Steps

- ▶ **Input from customers**
 - Please submit input by **January 14, 2011**
 - Assist Western in developing 2021 PMI Proposal
- ▶ **Federal Register Notice is planned for early calendar year 2011**
 - Kick-off formal 2021 PMI public process



Provide Input to:

Mr. Jody S. Sundsted
Power Marketing Manager
Upper Great Plains Region
Western Area Power
Administration
2900 4th Avenue North
Billings, MT 59101-1266
(406) 247-7394
Email: UGP2021@wapa.gov

Mr. John A. Pankratz
Public Utilities Specialist
Upper Great Plains Region
Western Area Power
Administration
2900 4th Avenue North
Billings, MT 59101-1266
(406) 247-7392
Email: UGP2021@wapa.gov

2021 PMI Information

<http://www.wapa.gov/ugp/PowerMarketing/2021PMI.htm>



WESTERN AREA POWER ADMINISTRATION
An agency of the U.S. Department of Energy

Upper Great Plains Region

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2021 Power Marketing Initiative

Firm Electric Service contracts administered by the Upper Great Plains Region of Western Area Power Administration (Western) expire on December 31, 2020. Western is preparing for a public process to market power beyond the year 2020. Western will hold a series of meetings for all Firm Power Customers to review the fundamental principles of the current marketing plan and to discuss how these principles could be utilized in the 2021 Power Marketing Initiative.

- ****What's New****
 - [Customer Meetings Information](#)
- [Historical Documents](#)
- [Letters to Customers](#)
- Presentations
- Federal Register Notices
- Frequently Asked Questions (FAQ)

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Questions / Input