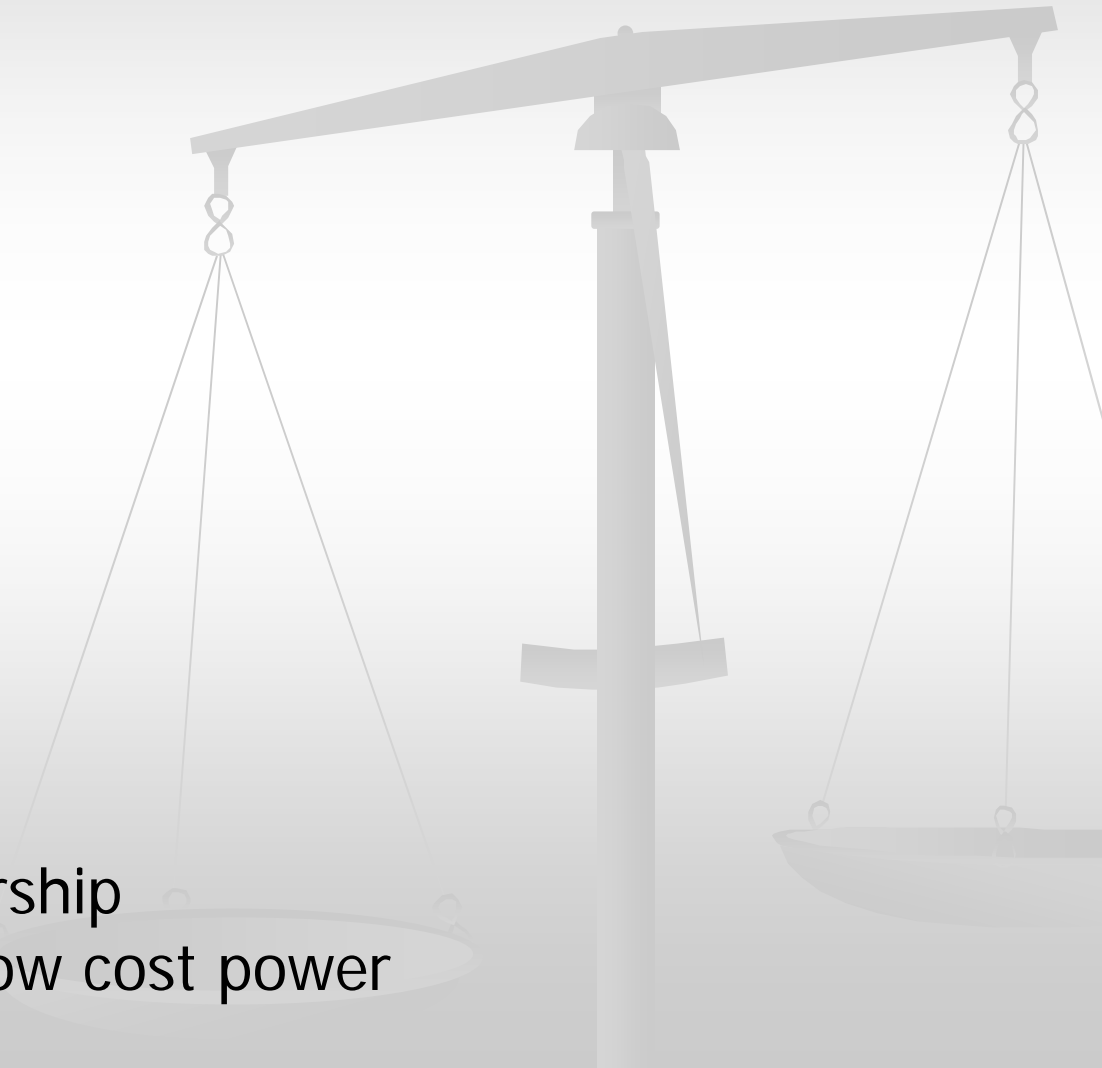


Hydro Production and Power Management

- The Focus
- Communication
- Forecasts
- Decision Making Process

Benefits of a good partnership
Producing safe, reliable, low cost power

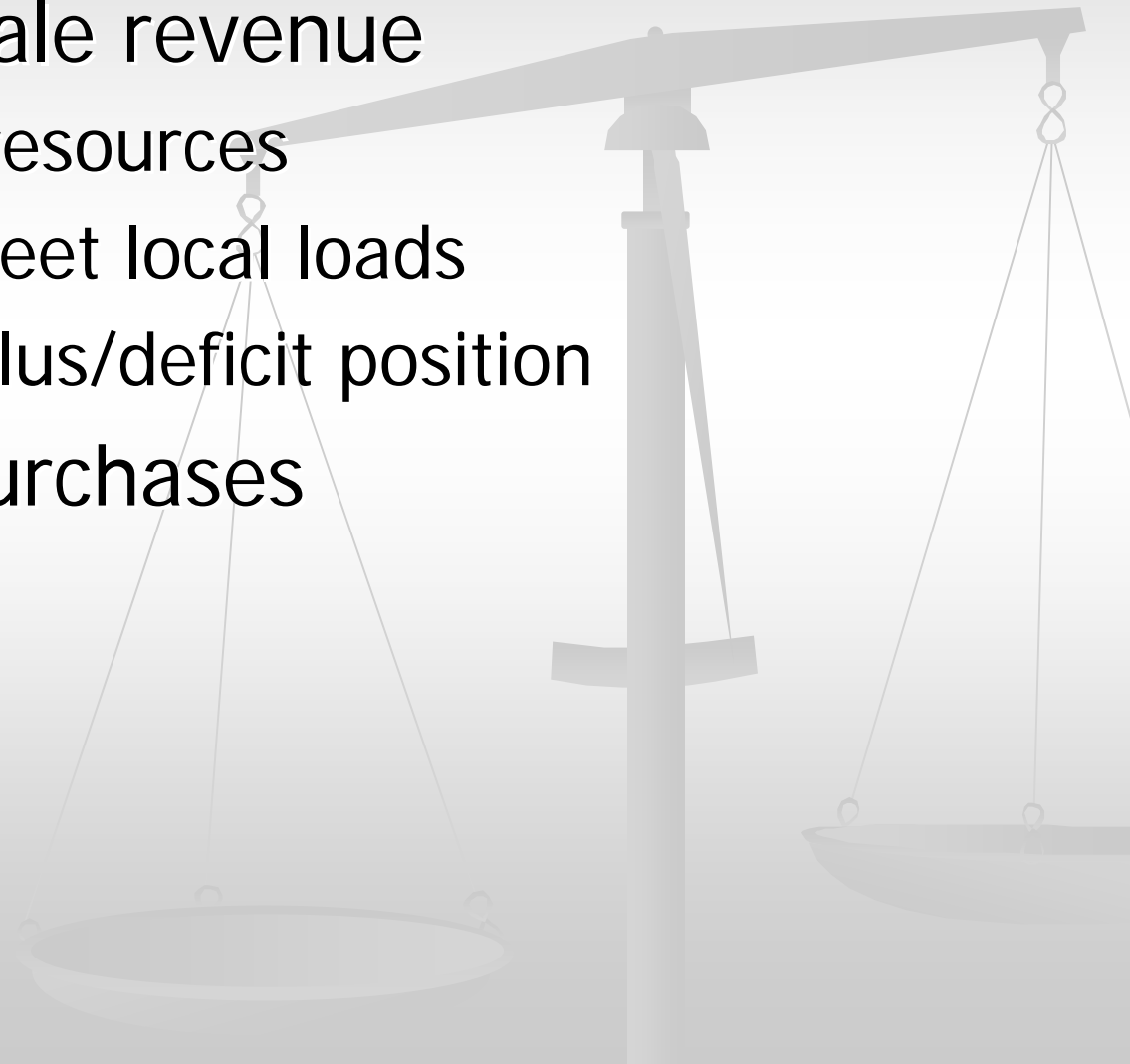


The Focus

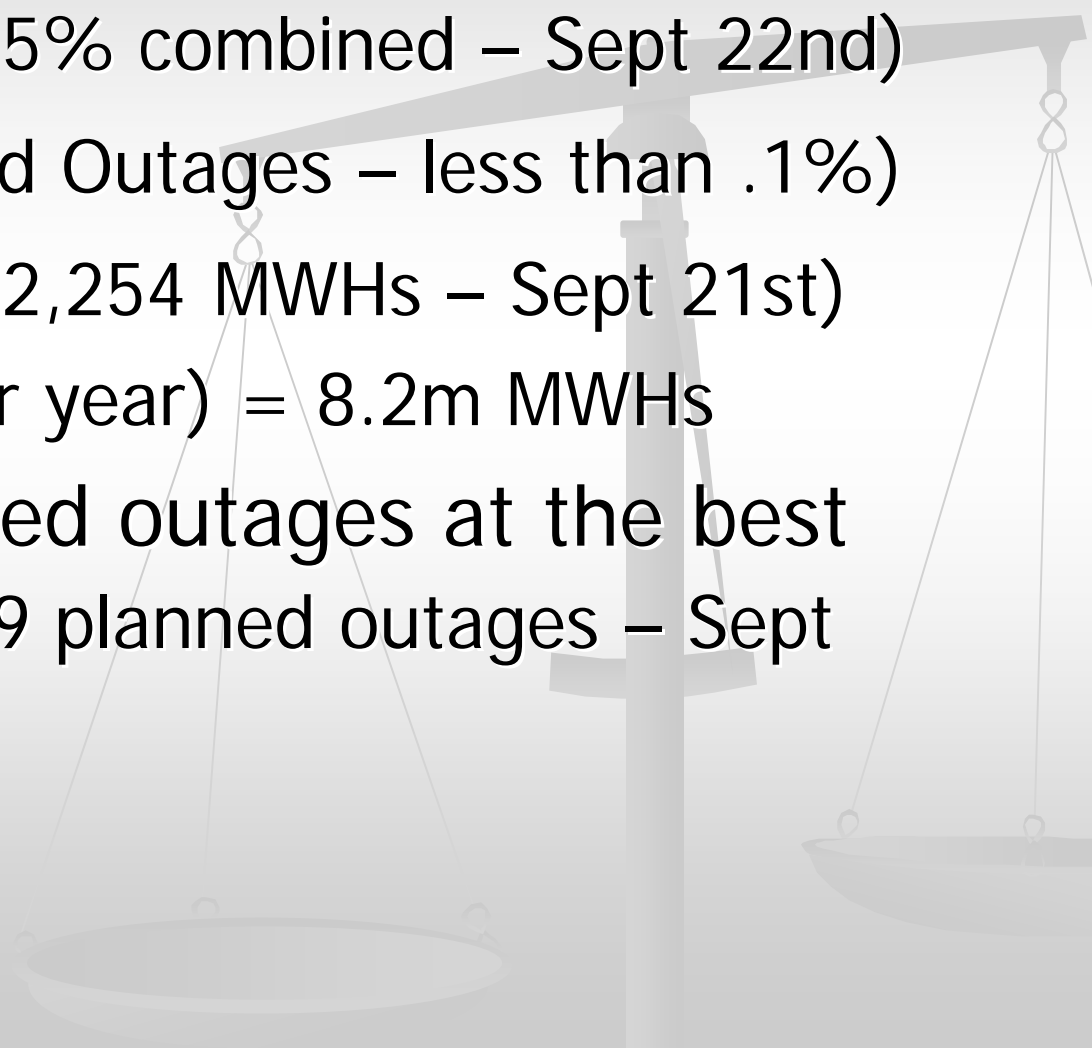


Power Management's Focus

- Manage wholesale revenue
 - Forecast of all resources
 - Forecast and meet local loads
 - Determine surplus/deficit position
- Surplus sales/purchases
 - Forward
 - Preschedule
 - Real time



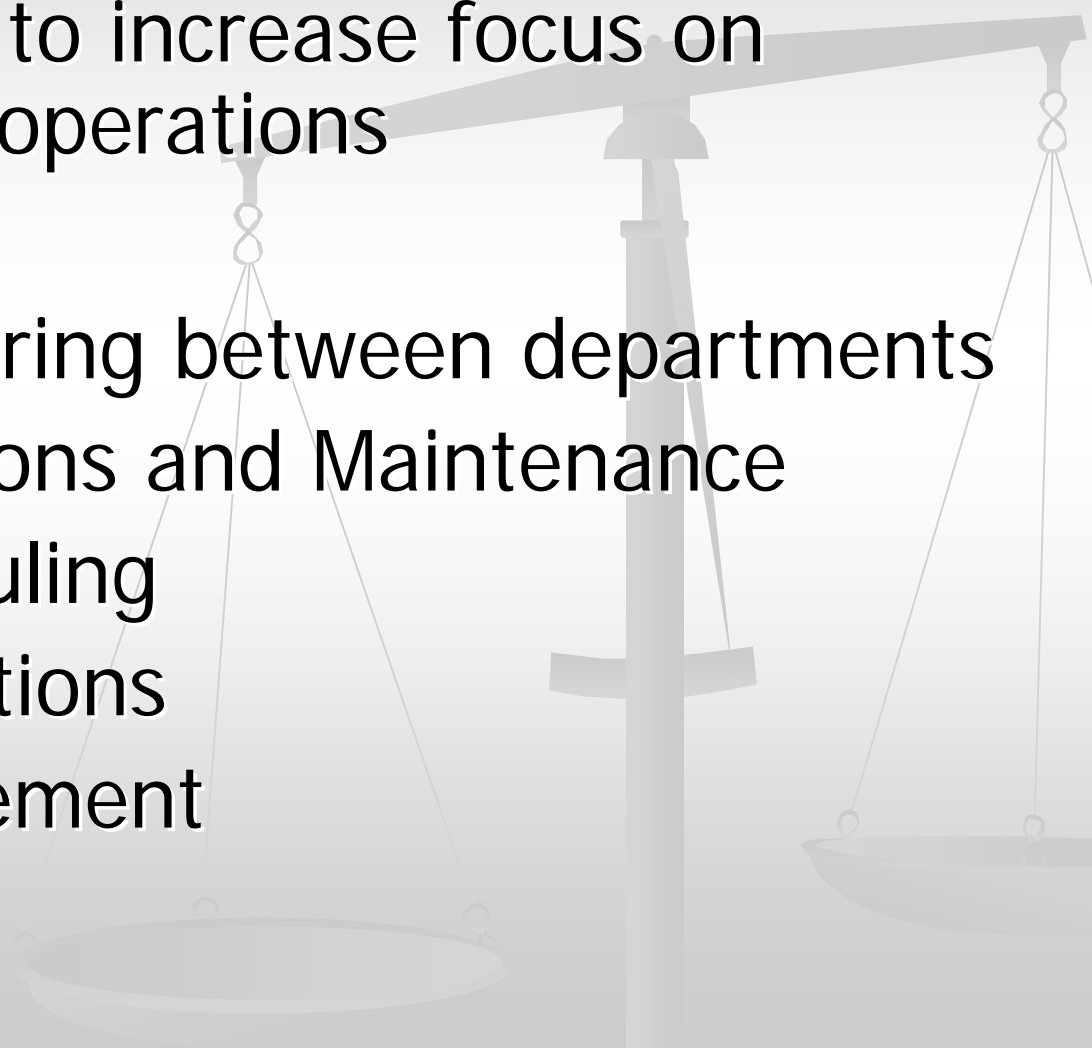
Generation's Production Focus

- Availability (98.15% combined – Sept 22nd)
 - Reliability (Forced Outages – less than .1%)
 - Production (7,072,254 MWHs – Sept 21st)
2002 (100% water year) = 8.2m MWHs
 - Efficiently planned outages at the best possible time (99 planned outages – Sept 22nd)
- 

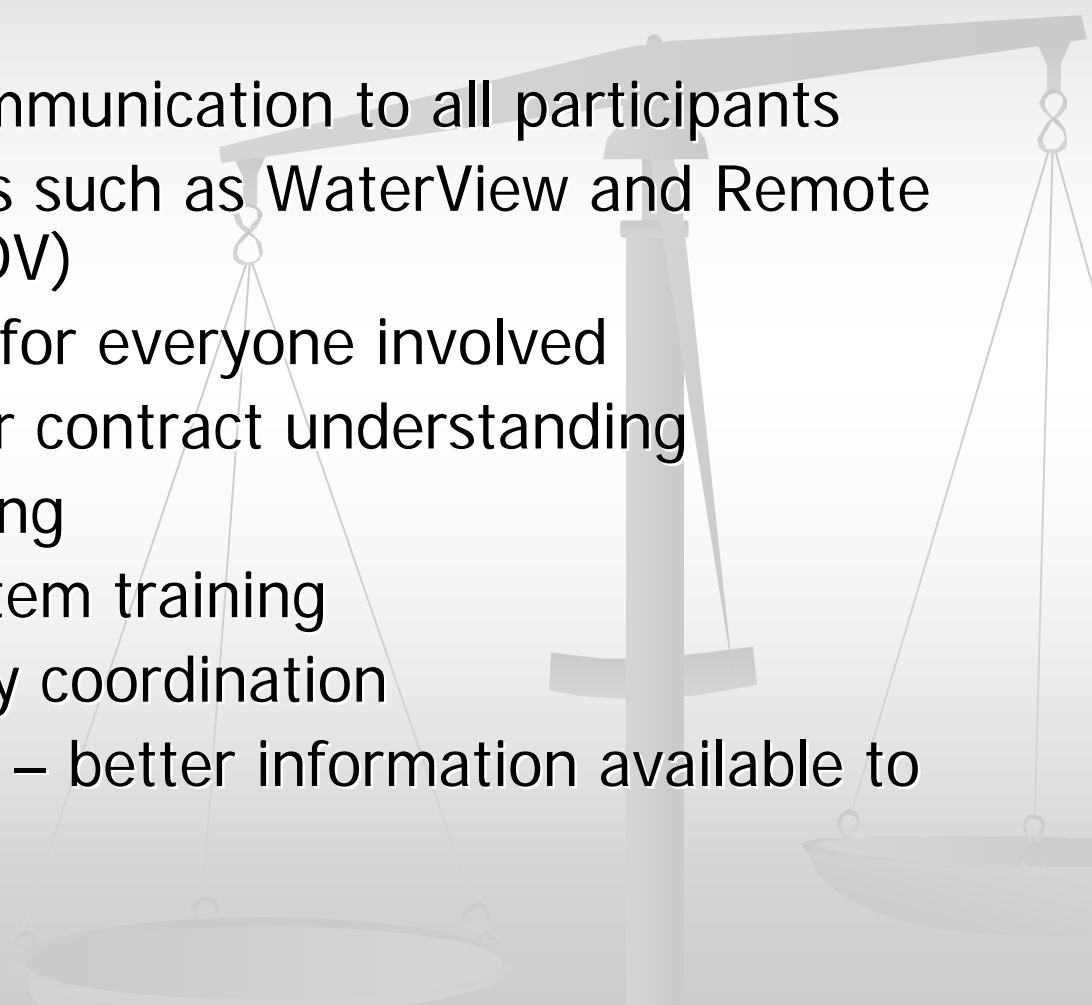


Communication

Power Operations and Production (POP)

- Started in 1999 to increase focus on production and operations
 - Original team
 - Information sharing between departments
 - Hydro Operations and Maintenance
 - Outage scheduling
 - System Operations
 - Power Management
- 

What POP helped create

- Outage Coordination
 - Improved outage communication to all participants
 - Development of ideas such as WaterView and Remote Operated Vehicle (ROV)
 - Education – learning for everyone involved
 - purchaser and other contract understanding
 - market understanding
 - Columbia River System training
 - Mid Columbia hourly coordination
 - Improved reporting – better information available to make good decisions
- 

Power Operations and Production (POP) Meetings

7 Day Chief Joe Estimated flows in average KCFS:

Thu 95, Fri 95, Sat 85, Sun 65, Mon 115, Tues 110, Wed 110, Thu 110

Pre-Schedule Power Prices HLH \$ 63.28 & LLH \$ 51.75 for a Capacity Value of \$11.53 (Fri/Sat)

July Grand Coulee Jan-Jul runoff forecast was 106%
Lake Chelan actual Runoff was 121% for Lake Chelan

Rocky Reach

8-20-06 to 8-25-06 trashrack cleaning by divers one unit per night 22:00 to 06:00
C1 & C2 9-10-06 06:00 to 16:00 Trashrack cleaning every 2 weeks
C5 9-25-06 06:00 to 11-4-06 23:00 Generator Stator Replacement
C7 outage after C5 back (mid-Nov) then C9 after C7

Rock Island

U5 9-5-06 06:00 to 9-19-06 06:00 PH2 Transformer Bank #3 replacement (out the whole time)
U6 9-5-06 06:00 to 9-19-06 06:00 Trashrack, breaker, & transformer change out
U7 & U8 9-5-06 to 9-19-06 Unit outage each night 22:00 to 06:00 for divers on U6
trashrack (intermittent outages)
Index testing RI1 units in Oct
U8 10-1-06 21:00 to 10-15-06 06:00 Trash rack change out (could be changed to U5, U4 and U6
would have intermittent outages)

Current POP Partners

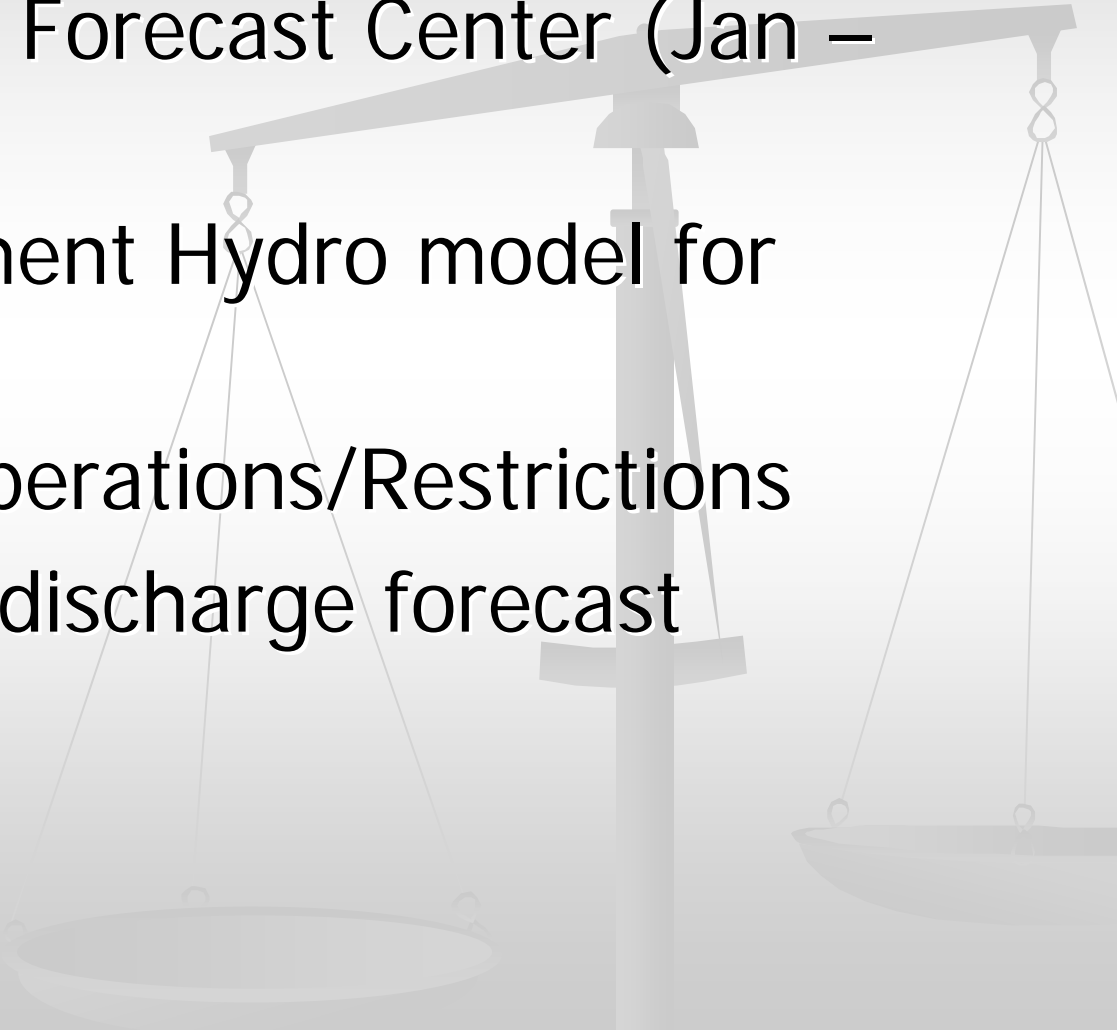
- Hydro Operations
- Power Management
- Hydro Planning/Production
- System Operations
- Transmission/Distribution
- MidC Coordinator
- Water Quality
- F&W



Forecasts



River Flow Forecasts

- Northwest River Forecast Center (Jan – July) forecasts
 - Power Management Hydro model for monthly flows
 - Current River Operations/Restrictions
 - Chief Joe 8 day discharge forecast
- 

Market Forecasts

- Forward Price Predictions
- Daily Market Price trends



Daily Updates via e-mail

CHJ Flows:

Key date - today's flow/day + 1/day + 2/ etc.

9/14- 75/75/45/45/85/85/85/85

This morning's off-peak real-time prices traded between \$35-\$40 and peak hours started out trading in the \$43-\$45 range. The weather forecast for today predicts temps of 48-66°, partly to mostly cloudy skies with the chance of a few spotty showers. Cool temperatures with breezy west winds 10 to 15 mph mainly in the morning. The peak load for Wednesday was 159 MW.

The pre-schedule prices for Friday (9/15) and Saturday (9/16) are \$33 for LLH and \$42 for HLH. Friday's forecast calls for temps of 47-65°, partly cloudy with the chance of a few spotty showers; light west to northwest winds. Saturday is predicted to be in the 45-69° range, with similar conditions as Friday. The District's predicted peak load (excluding Alcoa) for Friday and Saturday is 156 MW and 159 MW, respectively.

Energy Alert File <file:\\T:/Intranet/alert/energyalert.xls>

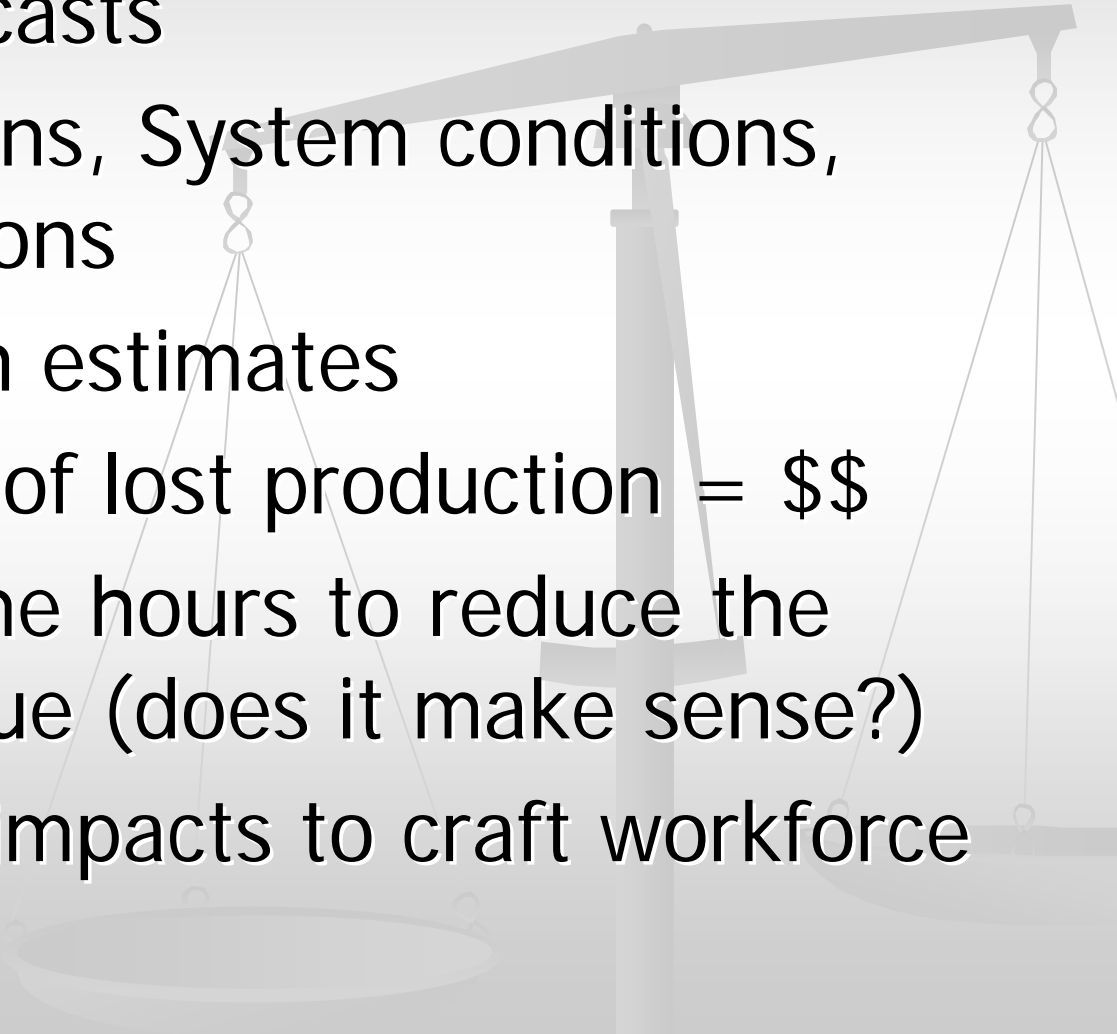
Energy Alerts

	A	B	C	D	E	F	G	H	I	J	K
1	last updated at	8/21/2006 8:00									
2	Energy Shortage Alert - System Conditions										
3	Green	Normal O / M		Yellow	Conservative O / M		Red	Critical O / M			
4		REAL TIME		Pre Sched.		Pre Sched.		Pre Sched.			
5	Hour Ending	8/21/2006		8/22/2006		8/23/2006		8/24/2006			
6		Mon		Tue		Wed		Thu			
10	0001	Green		Green		Green		Green			
11	0002	Green		Green		Green		Green			
12	0003	Green		Green		Green		Green			
13	0004	Green		Green		Green		Green			
14	0005	Green		Green		Green		Green			
15	0006	Green		Green		Green		Green			
16	0007	Green		Green		Green		Green			
17	0008	Green		Green		Green		Green			
18	0009	Green		Green		Green		Green			
19	0010	Green		Green		Green		Green			
20	0011	Green		Green		Green		Green			
21	0012	Red		Yellow		Green		Green			
22	0013	Red		Yellow		Green		Green			
23	0014	Red		Yellow		Green		Green			
24	0015	Red		Yellow		Green		Green			
25	0016	Red		Yellow		Green		Green			
26	0017	Red		Yellow		Green		Green			
27	0018	Red		Yellow		Green		Green			
28	0019	Red		Yellow		Green		Green			
29	0020	Red		Yellow		Green		Green			
30	0021	Red		Yellow		Green		Green			

Decision Making Process



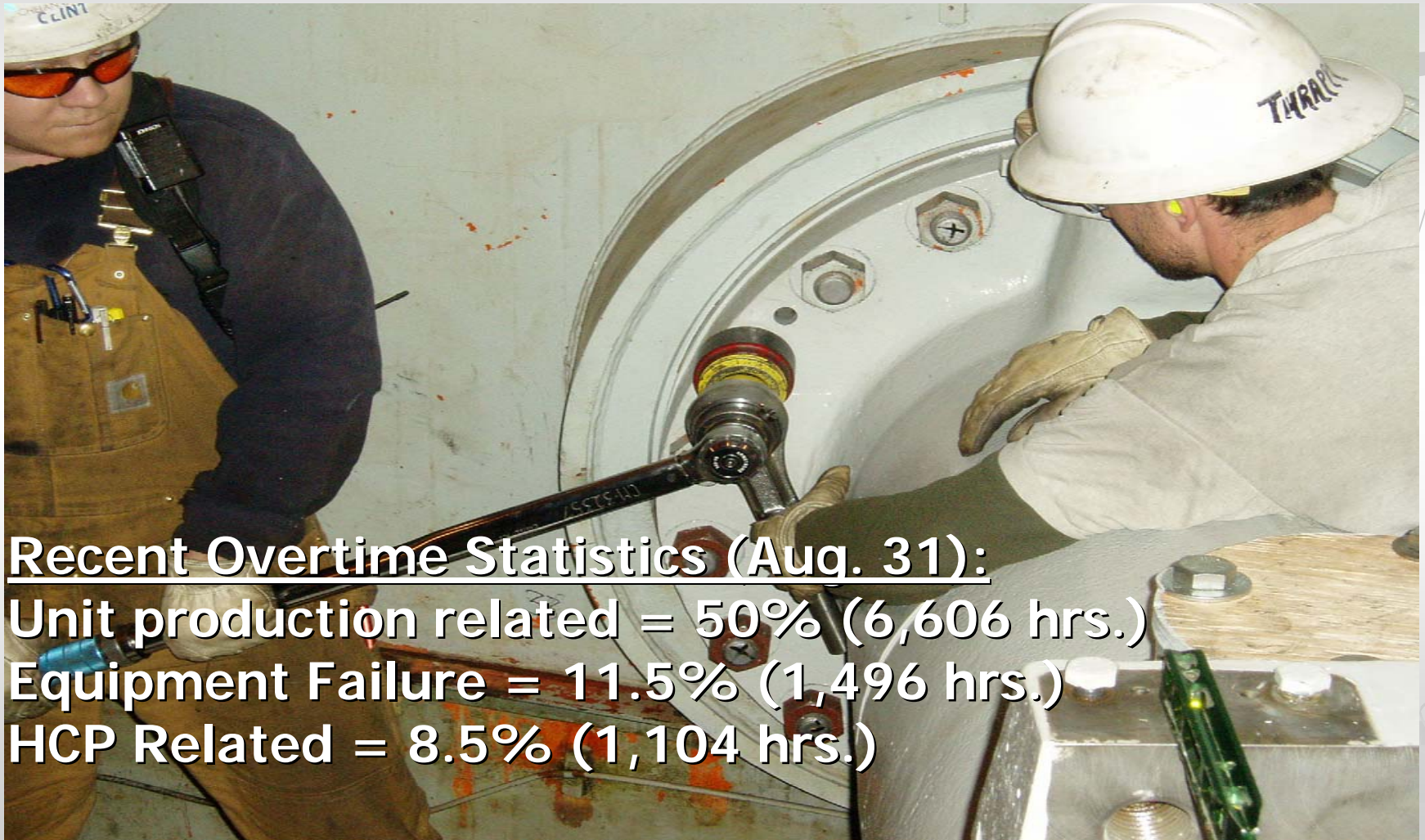
River, Market, Outage, and Overtime Considerations

- River Flow Forecasts
 - Market Predictions, System conditions, Weather conditions
 - Outage Duration estimates
 - Predicted Value of lost production = \$\$
 - Possible Overtime hours to reduce the impact to revenue (does it make sense?)
 - Availability and impacts to craft workforce
- 

Outage Value Estimates

Unit Cap.	100												
Px	\$ 2	\$2	\$2	\$1	\$ 2	\$ 5	\$ 6	\$ 10	\$ 10	\$ 12	\$ 14	\$ 16	
HE	1	2	3	4	5	6	7	8	9	10	11	12	
Planned:													
C1&C2								\$2,000	\$2,000	\$2,400	\$2,800	\$3,200	
C3								\$1,000	\$1,000	\$1,200			
								\$3,000	\$3,000	\$3,600	\$2,800	\$3,200	
												\$15,600	
Alternative:													
C1&C2				\$400	\$1,000	\$1,200	\$2,000	\$2,000					
C3				\$200	\$ 500	\$ 600							
				\$600	\$1,500	\$1,800	\$2,000	\$2,000					
												\$ 7,900	
Avg. Px Diff	\$ 5.80											Diff.	\$ 7,700

Central Maintenance and Plant Staff scheduling for Outage work



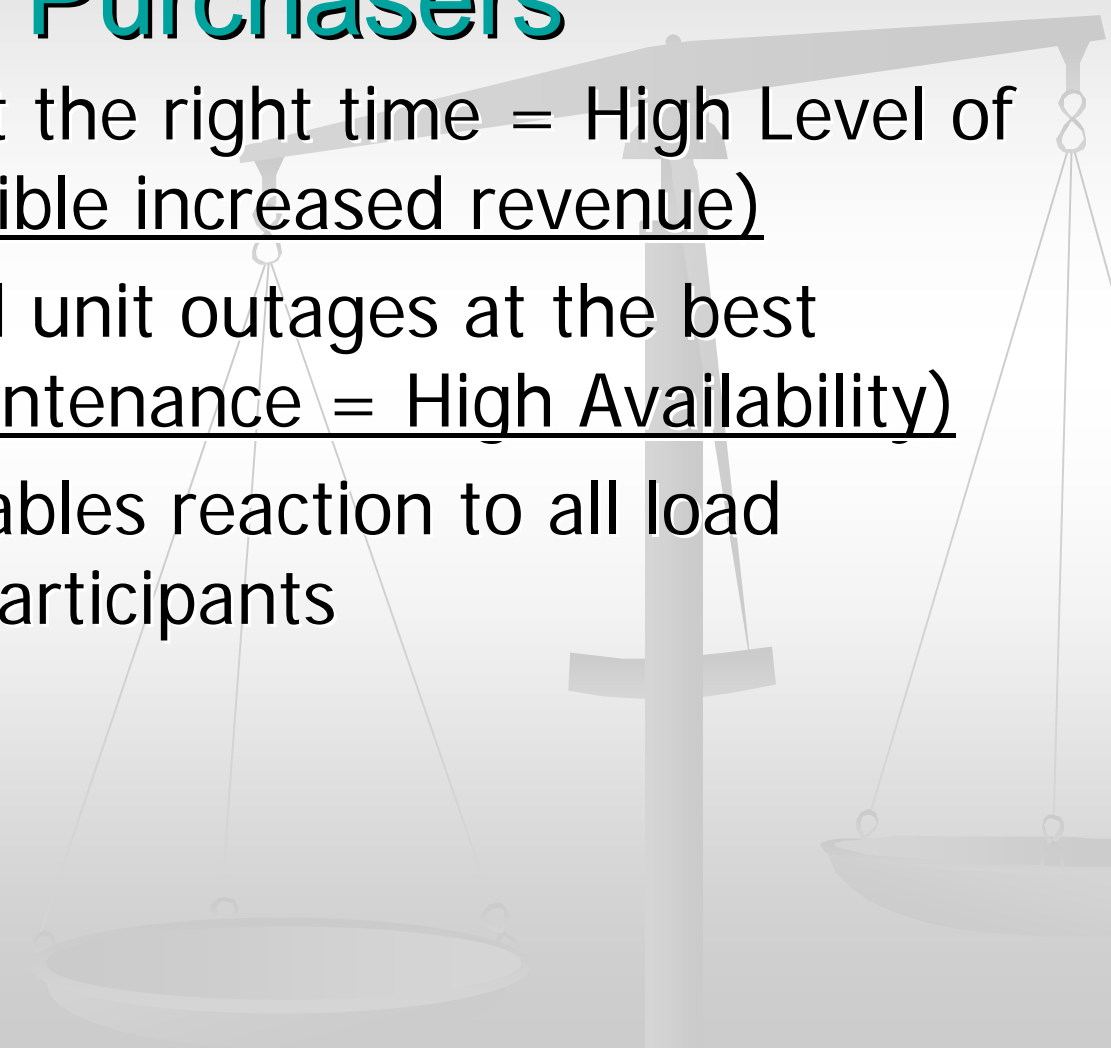
Recent Overtime Statistics (Aug. 31):

Unit production related = 50% (6,606 hrs.)

Equipment Failure = 11.5% (1,496 hrs.)

HCP Related = 8.5% (1,104 hrs.)

Overall Benefits to the Customer/Owners and the Power Purchasers

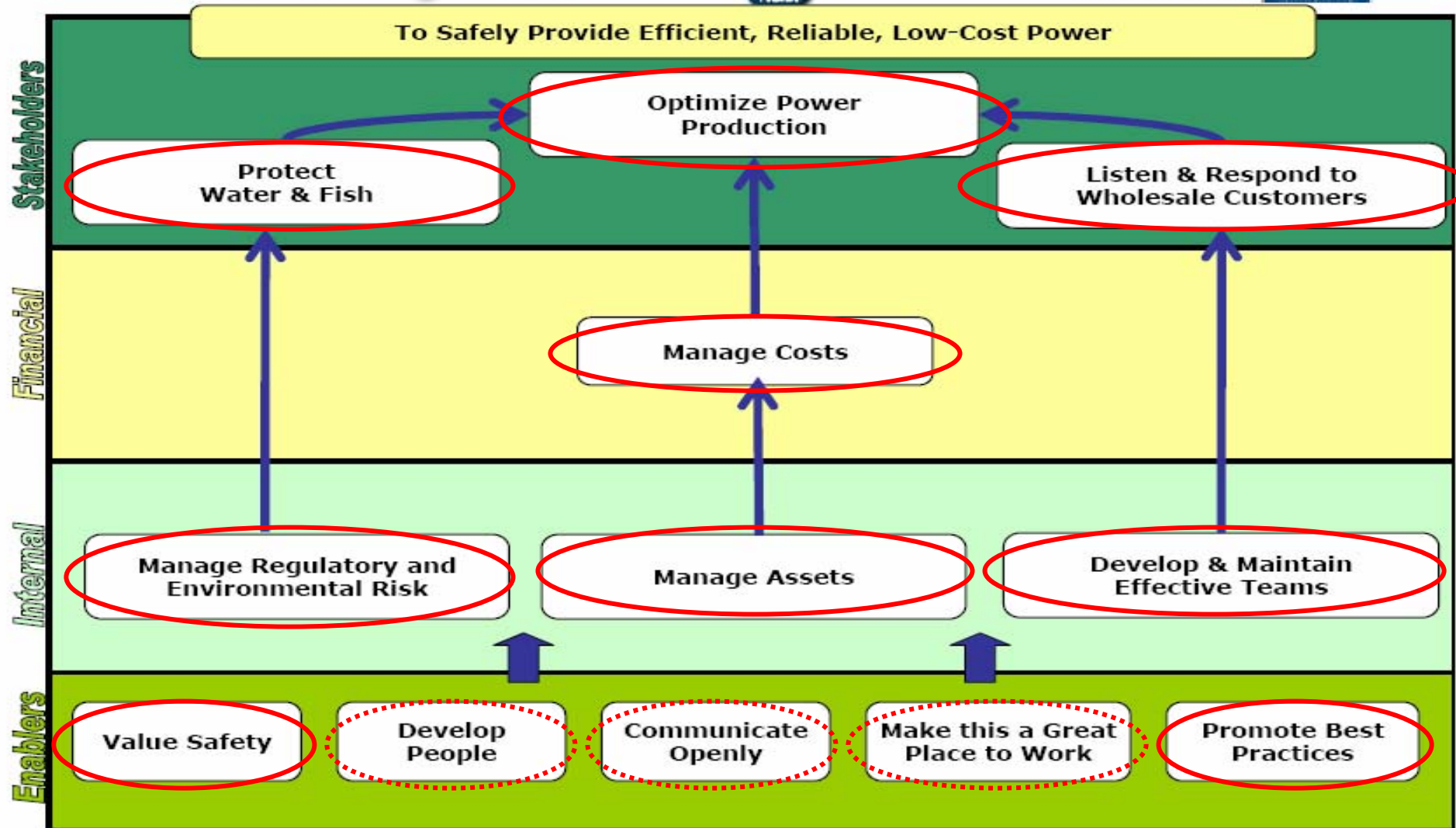
- High availability at the right time = High Level of Opportunity (possible increased revenue)
 - Efficiently planned unit outages at the best possible time (Maintenance = High Availability)
 - High reliability enables reaction to all load requests for our participants
- 

Links to Generation Strategy Map

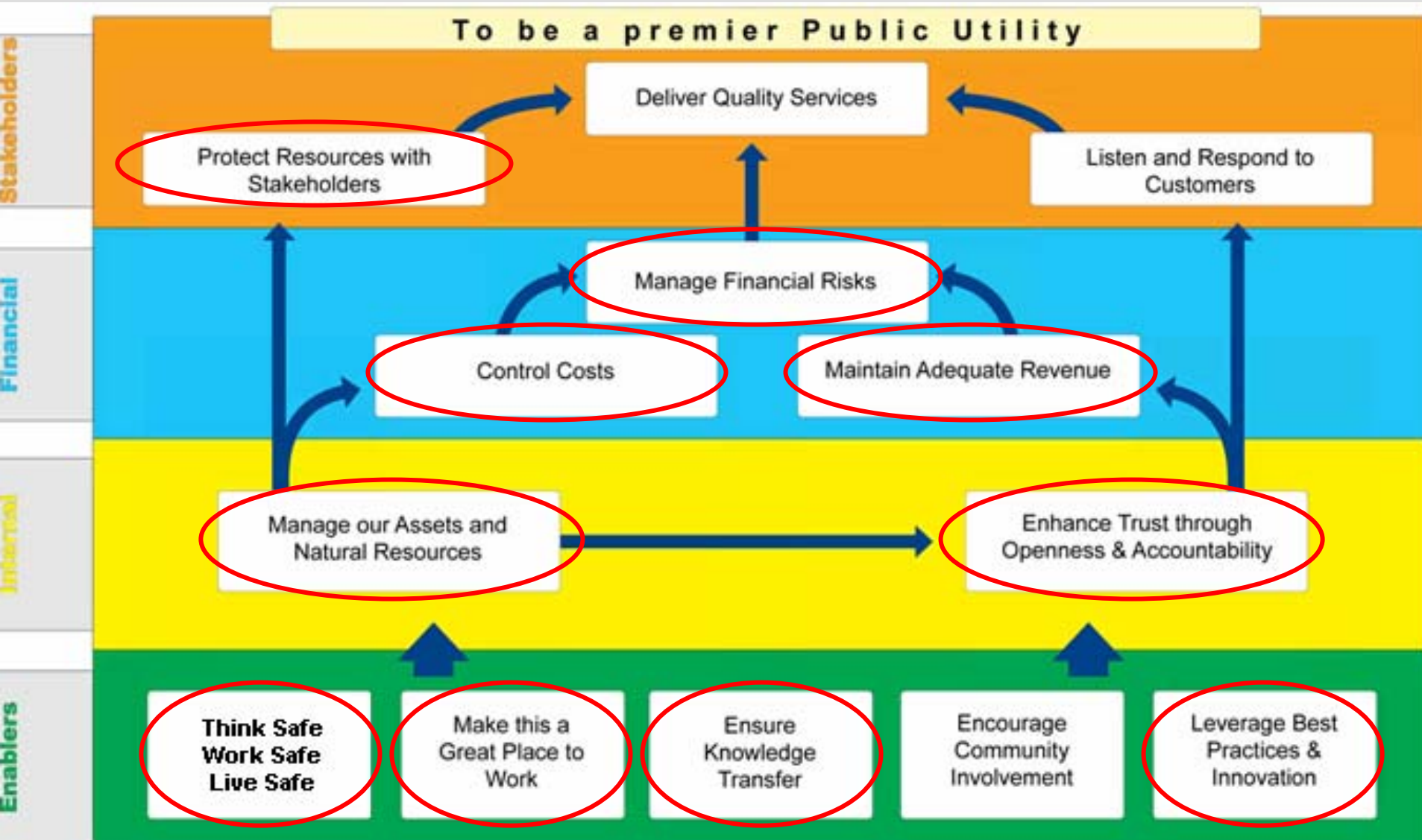
Chelan County PUD



Generation



Links to the BSC



Questions?

