

High Density Load (HDL) Update

March 19, 2018



Today's discussion

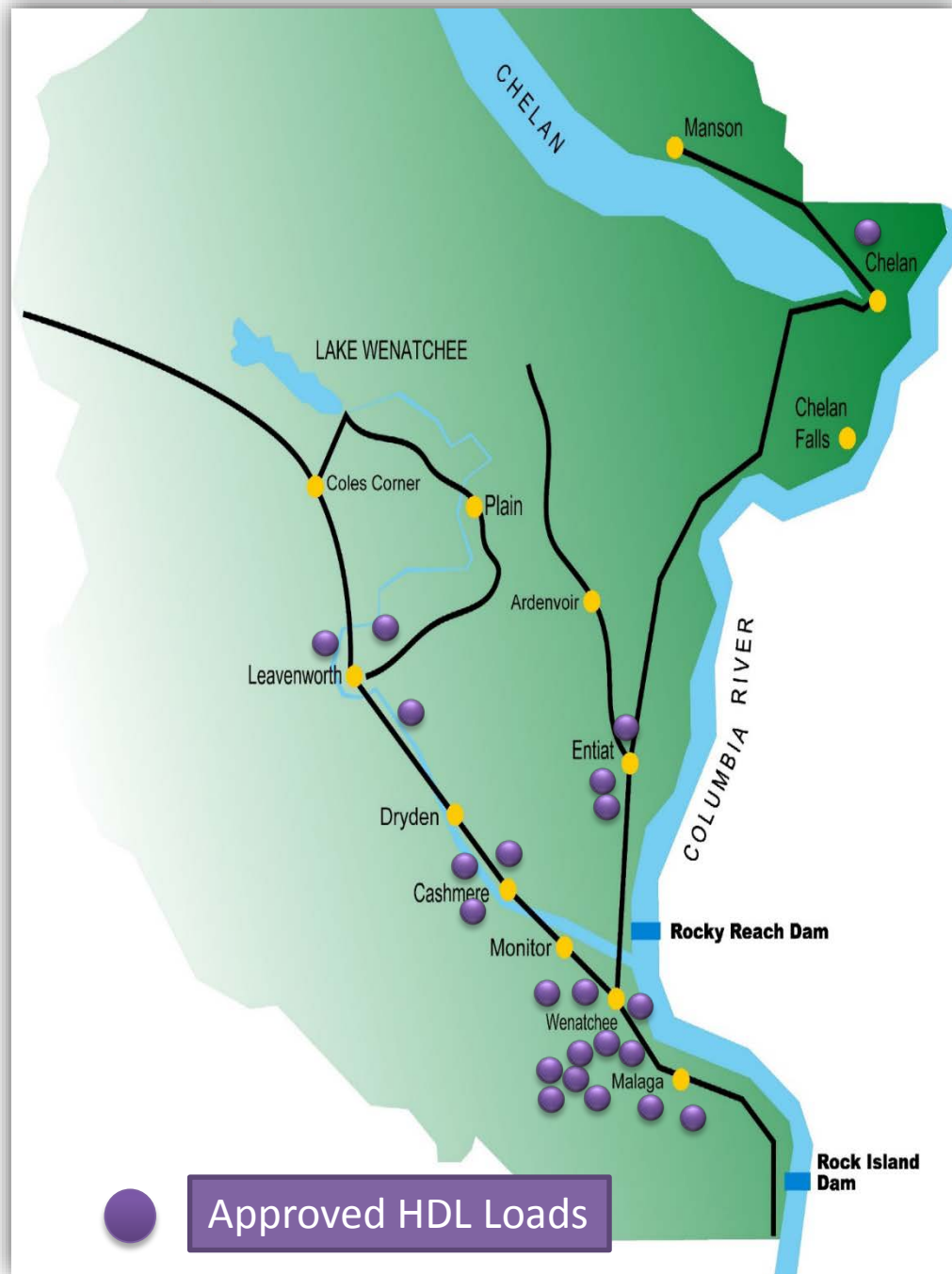
Action requested today

- Current state of HDL 5 MW and less
- Unauthorized HDL challenges & findings
- Staff targeted areas for review:
 - Service Regulations
 - Fees & Charges
 - HDL Rate Schedule
- Challenges over 5 MW
- Next Steps

Applied HDL Service Approved & Operational 5 Megawatts or Less

Vicinity		Industrial Zone	Commercial Zone	Residential Zone
CASHMERE		1	2	
CHELAN			1	
ENTIAT		2		1
LEAVENWORTH			2	1
MALAGA			2	
Manson				
WENATCHEE		1	8	1
TOTALS		4	15	3

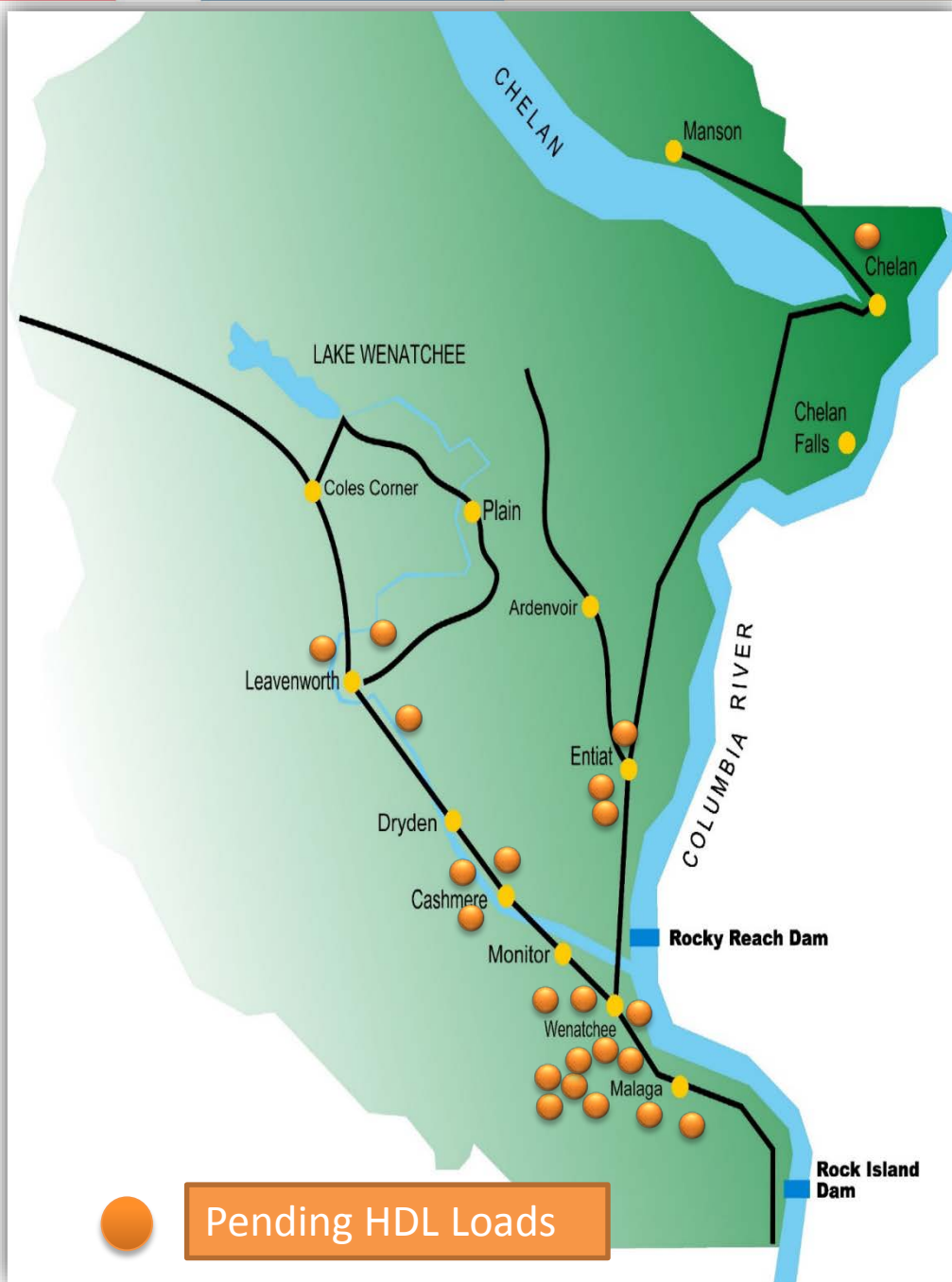
(22) Approved & Active HDL Loads
Total approved load ~ 13.5MW



Applied HDL Service “Under Review” 5 Megawatts or Less

Vicinity		Industrial Zone	Commercial Zone	Residential Zone
CASHMERE			2	
CHELAN				
ENTIAT		2		
LEAVENWORTH			1	
MALAGA		1	2	
MANSON			2	
WENATCHEE			3	6
TOTALS		3	10	6

(19) Pending Applications For HDL Loads
Total Pending load ~ 16.3 MW



Customer Service Challenges

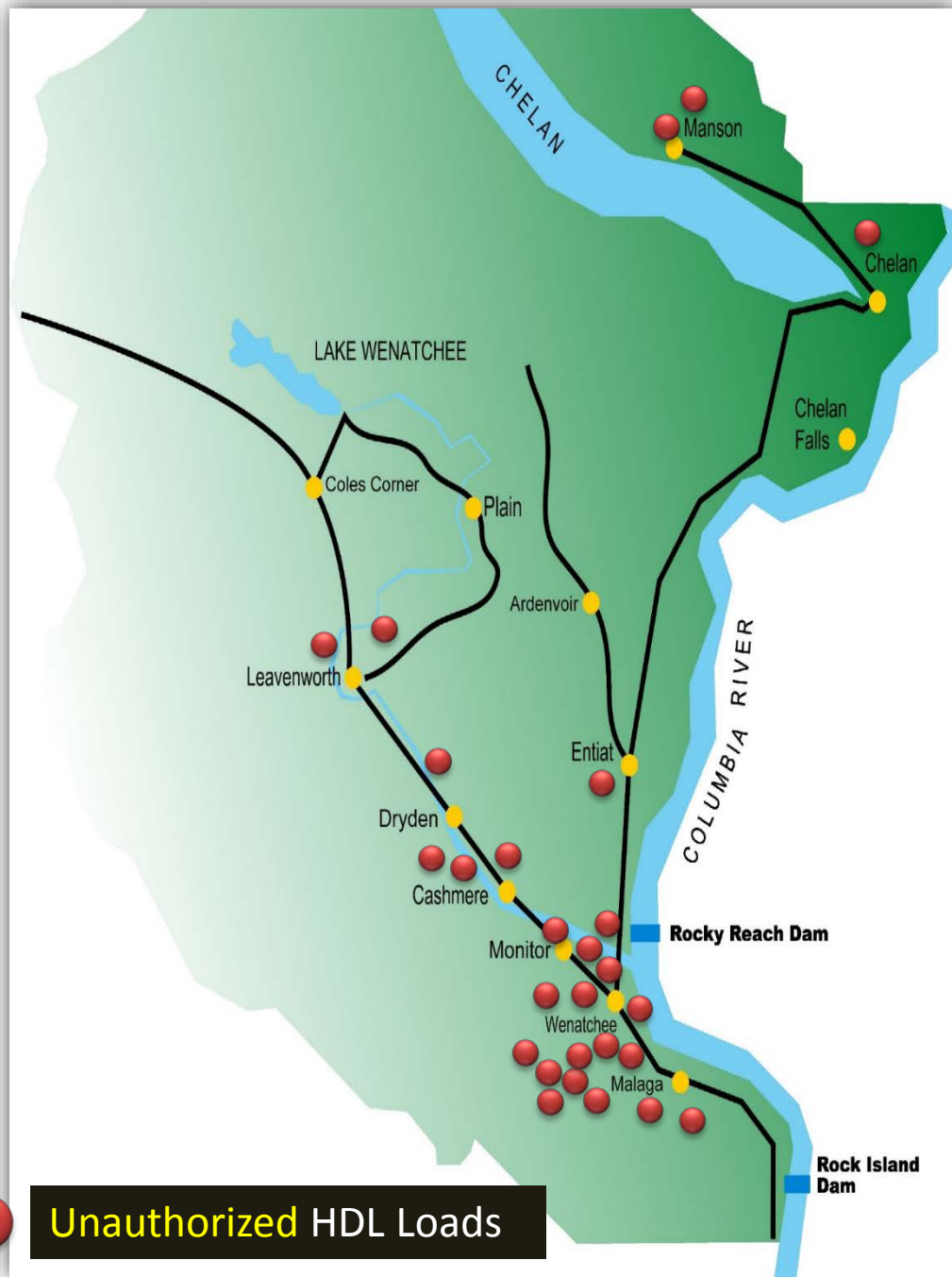
- The number of HDL applications thus far in 2018 is approaching 2017 totals
- The volume of applications is having a material impact on the customer experience for non-HDL applications
- HDL applicants are unfamiliar with local codes, state regulation, and District service regulations and policies
- Applications are often incomplete, vague or misleading
- HDL applicants expectations are not in line with standard application process

Customer Service Challenges

- Application impacts are complex requiring District specialists
- We receive multiple/competing HDL applications for the same location
- When larger services are not available at a location or within the requested timeline the request is split into multiple requests at different locations
- District infrastructure doesn't have the capacity to meet most of these requests, and if we do there is little left for planned load growth or contingency
- Existing customers operate without applying for service

Unauthorized HDL Services Located by PUD Staff 5 Megawatts or Less

AREA	FOUND IN FIELD	SHUT DOWN	NOW SCH 35
CASHMERE	3	2	1
CHELAN	1		1
ENTIAT	3		3
LEAVENWORTH	2	1	1
MALAGA	2	2	
MANSON	2	2	
WENATCHEE	15	12	3
TOTALS	28	19	9
Watch List	12 and growing		

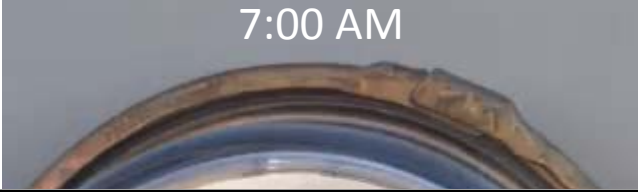


Unauthorized HDL Loads

System Challenges

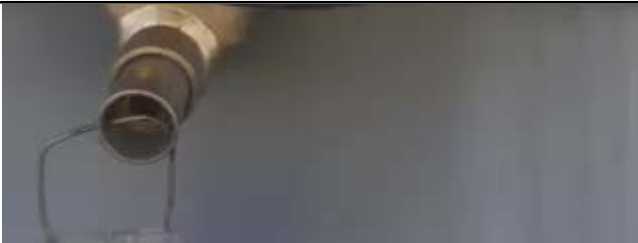
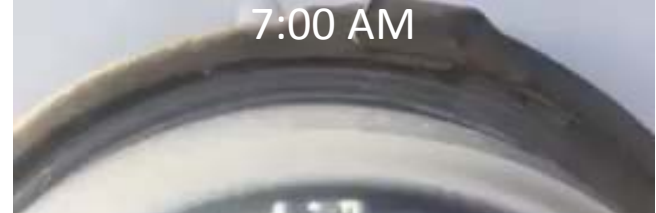
Residential Meter Normal Load

7:00 AM



Unauthorized HDL Meter

7:00 AM



Investigation Findings



- The utility supply equipment is overloaded
- There is general disregard for utility supply equipment
- The users are unaware of potential risks
- They occur in leased or rented space
- They occur in spaces not designed for HDL
- They claim not to understand the rate schedules and policies
- They don't obtain required electrical permits or licenses
- They want to avoid paying utility costs (fees, charges & rates)
- They are often remotely operated

Emerging Trend

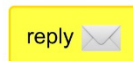
- Co-location advertising on Craigslist and social media
- Agencies are recruiting to Chelan County from Seattle/Western Washington metro areas
- Local realtors report they receive “constant calls” for mining space
- Property owners with space available being approached frequently
- Residential homes bought and used for cryptocurrency mining only
- Discovering more unauthorized mining operations every week

★ \$1 / 10ft² - Bit Coin Mining (Chelan County) 



We have properties for rent or for sale that can be used for Bit Coin Mining. Areas of low electric rates in Eastern Washington.

Call test or email for list.



Posted 12 days ago



★ **Bitcoin Colocation and acreage (Wenatchee)** 

Large and small miners welcome.
1-5 MWh installed for heavy industrial usage.
send response with your phone #,
name and email address and # of rigs

10 properties under development
partners and investors wanted

Proposed Response to Unauthorized HDL

Current tools

- District may immediately transfer to Rate 35
- Customers will be back-billed for utility services identified as HDL
- The District will hold the customer responsible for equipment damage/repair cost
- The District will disconnect service



Proposed tools

- Implement investigation, monitoring, equipment degradation and other fees and charges to recoup costs
- Clarify that the District considers the unauthorized operation as theft of services and report to local authorities
- Notify municipalities/government agencies for public safety

Cost Recovery Evaluation

Rate Schedule 35 - High Density Load

- Effective January 2017, over one year of data collected
- As a result we need to review rate assumptions, including
 - Actual characteristics of this load create different and unexpected costs
 - Class definition should be specific to the type of load causing the costs and risks we have seen
 - Basic charge tiers, where small size has lowest charge and large size has greatest charge, are opposite the experienced level of effort required
 - Ensure risks, like unrecovered cost for unauthorized HDL, are included in class cost
 - Overall increases to District cost indicate a need for an automatic rate escalator

Cost Recovery Evaluation

Upfront Capital Charge

- Cost recovery timeline/business model mismatch necessitates review of this charge
- Reviewing our approach to distribution infrastructure cost and whether full replacement cost is more appropriate
- Consider cost recovery risk when equipment must be de-rated
- **Add a transmission infrastructure cost component**

Cost Recovery Evaluation

Example: Transmission Infrastructure Upfront Cost Component

- HDL Rate applies countywide, however due to their dispersed nature and changing numbers and sizes it is impractical to review all requests in a detailed manner or achieve meaningful results for transmission cost
- Analysis utilized engineering judgement and rule of thumb estimates
- Used a hypothetical 100MW load in the challenging, yet not impossible, areas of the system
- Costs of interconnection are not included
- Marginal Costs:
 - Manson/Wapato \$450/kW - \$500/kW
 - Leavenworth \$400/kw - \$450/kW

Cost Recovery Evaluation

Example: Transmission Infrastructure Upfront Cost Component (cont.)

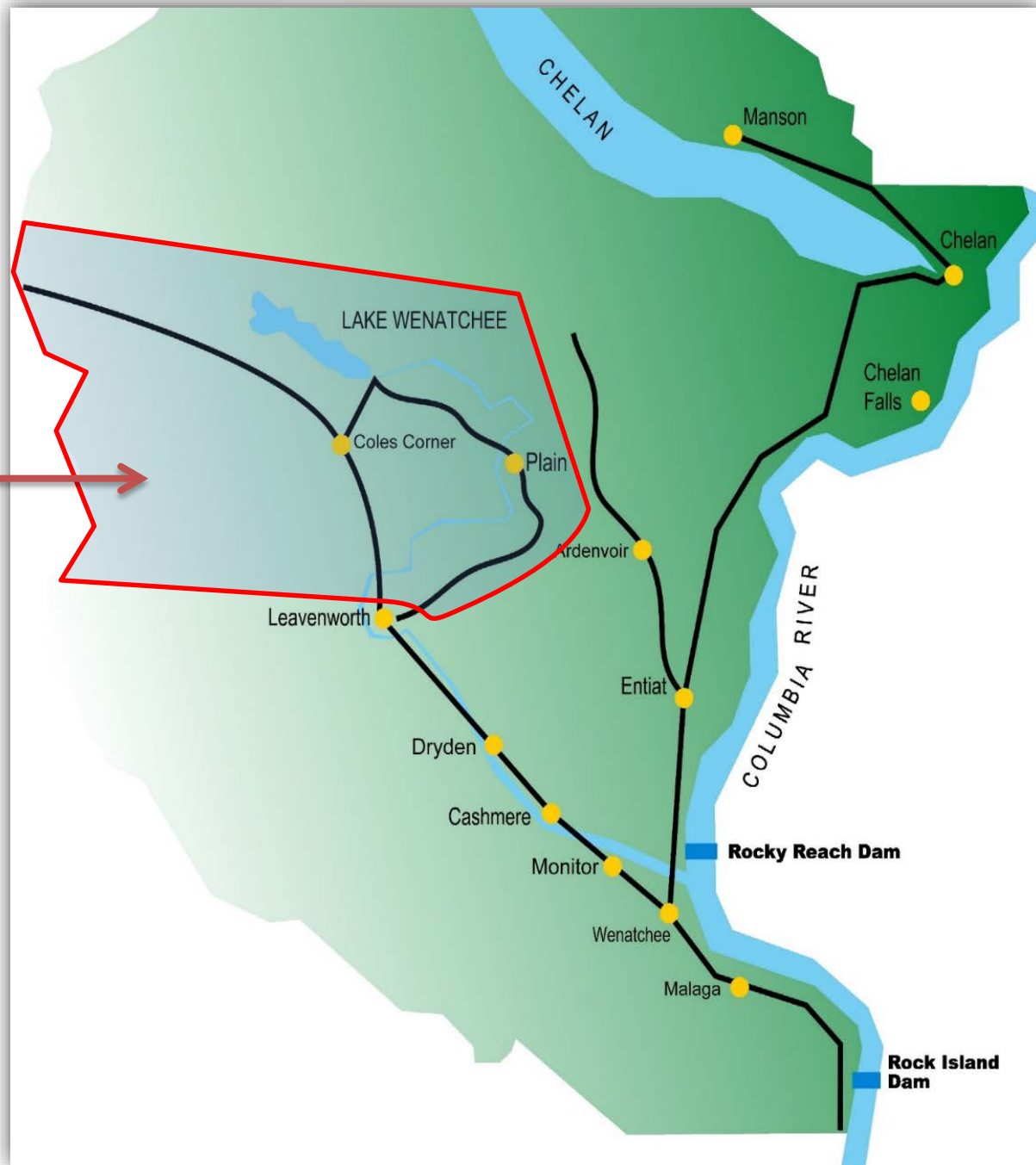
- Marginal transmission cost analysis did not include locations north of Leavenworth to Stevens Pass – these are considered “exclusion zone”
 - This is a remote area with service from a line constructed in the early 1930s
 - The line is predominately on federal land which has challenging permitting requirements
 - The line is nearly 100 miles long and would likely require rebuild to serve any significant amount of HDL

Example (cont.)

Transmission System Exclusion Zone

Exclusion Zone Includes:

North of Leavenworth,
Chumstick, Lk. Wenatchee,
Coles Corner, Tumwater
Canyon, Plain, Merit,
Berne, Winton, and
Stevens Pass.



Challenges of Cryptocurrency Loads > 5 MW

- Responding to requests for large amount of load in a short period of time with unrealistic expectations is overwhelming District resources, delaying other projects, and risks degrading service to thousands of other customers
- Inquiries sometimes shift between being below and above 5 MW
- Inquiries seek as much capacity as is available, which stresses transmission and distribution limits and challenges the District's ability to serve organic load growth
- Business model mismatch between District and customers creates unique risks, which warrants a careful approach to developing and applying rates and charges

Next steps

- Staff recommends a moratorium on computing and data processing loads related to virtual or crypto currency mining, bitcoin or similar
- During moratorium
 - Review and modify Rate Schedule 35
 - Include transmission element in upfront charge
 - Continue to develop over 5 MW processes and rates
 - Review service regulations
 - Consider necessary planning standards, processes, procedures
- Review and modify fees & charges for unauthorized load
- Wide-spread communication and implementation of consequences of unauthorized HDL operation
- Continue outreach w/ State, municipals & County building code officials
- Continue to advance our technologies and analytics

Action Requested: Proposed Motion

Move to adopt a moratorium on accepting any new electric service applications or further processing any existing electric service applications for proposed computing or data processing loads related to virtual or crypto-currency mining, bitcoin or any similar purpose, whether above 5 MW pursuant to Schedule 4 or, at or below 5 MW pursuant to Schedule 35 or any other schedule. The moratorium would not apply to approved applications that have fully paid all line extension estimates and upfront capital charges. Further, direct staff to prepare an appropriate confirming Resolution for consideration at the next Board meeting. Finally, setting a public hearing on the moratorium at 1:00 pm, May 14, 2018, in Wenatchee as part of the regular commission meeting for further consideration of the moratorium.



QUESTIONS ?

Photo: Entiat Mining Fire 2017