



CHELAN COUNTY

MORATORIUM PUBLIC HEARING

CRYPTOCURRENCY MINING & SIMILAR OPERATIONS

MAY 14, 2018



Today's discussion

- Background
- Challenges
- Actions since moratorium adoption
- Actions necessary to begin connecting new services
- Public comment
- Board Motion

BOARD ACTION REQUESTED TODAY

Background

- Existing Services & Requests
 - 22 Approved & Active HDL Services ~13.5 MW
 - 19 Requests (up to 5 MW each) for HDL Service ~16.3 MW
 - 5 Large requests (greater than 5 MW each) for service ~210 MW
- Investigation and enforcement of unauthorized loads continues
- Continued reprioritization of other planned efforts

Challenges

- Significant risks associated with new infrastructure, pricing, cost recovery, reliability, safety
- PUD decisions are based on long-term return on investment/value creation while mining requestors expect short-term return on investment (even less than 1 year) and often have unrealistic expectations of the District
- District manages the system to relatively predictable changes in load growth whereas mining requests do not follow predictable trends
- Wholesale marketing program impacts
- Transmission and distribution capacity availability
- Staff resources are over-allocated across the District to address these issues delaying certain District Performance Plan goals

Completed Action Items From 3/19

Unauthorized HDL

- ✓ Review and modify service regulations
- ✓ Review and modify fees & charges
- ✓ Communication and implementation
- ✓ Amnesty period - expiring today

Outcomes necessary to begin connecting new services

- Seek outcomes that provide service that is neutral to beneficial to existing customers
- Have reasonable assurance that costs resulting from these connections will be recovered through a mix of fees, charges, and rates
- Ensure that we can reliably serve both existing and new customers
- Inform new customers so they can develop reasonable expectations for the short and long-term
- Make decisions that support community plans
- Minimize staff impacts from unanticipated work

1. Updating Existing HDL

- Many previous direct cost assumptions for the high density load (HDL) rate were accurate, with the exception of:
- Assumptions relating to delivery underestimated costs as they did not account for additional line and transformer capacity needed for high load factors
 - Update upfront infrastructure component of HDL rate
- Risks, such as impact of mobility, business model mismatch, risk of volatile commodity prices, etc., were generally underestimated
 - Refine the rate classification

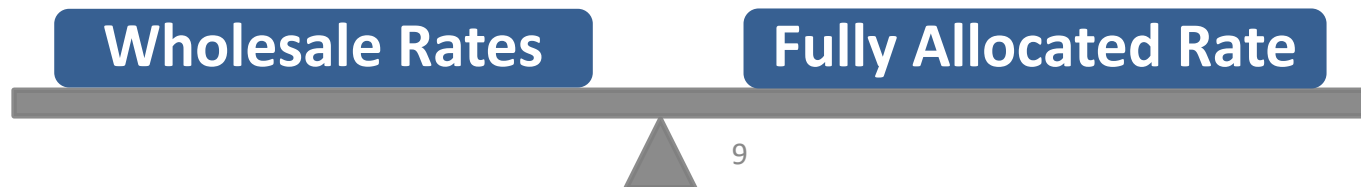
Updating Existing HDL (cont.)

- Based on experience with HDL loads, the classification is worth revisiting to create a specific cryptocurrency rate
 - Mining equipment is small, mobile and potentially transient
 - Mining loads tend to seek to use all available capacity by dividing and changing locations, impacting organic load growth ability
 - Reliance on volatile commodity prices
 - Translating electricity into currency
- Further cryptocurrency class definition discussion in June 2018

2. Energy Availability and Price

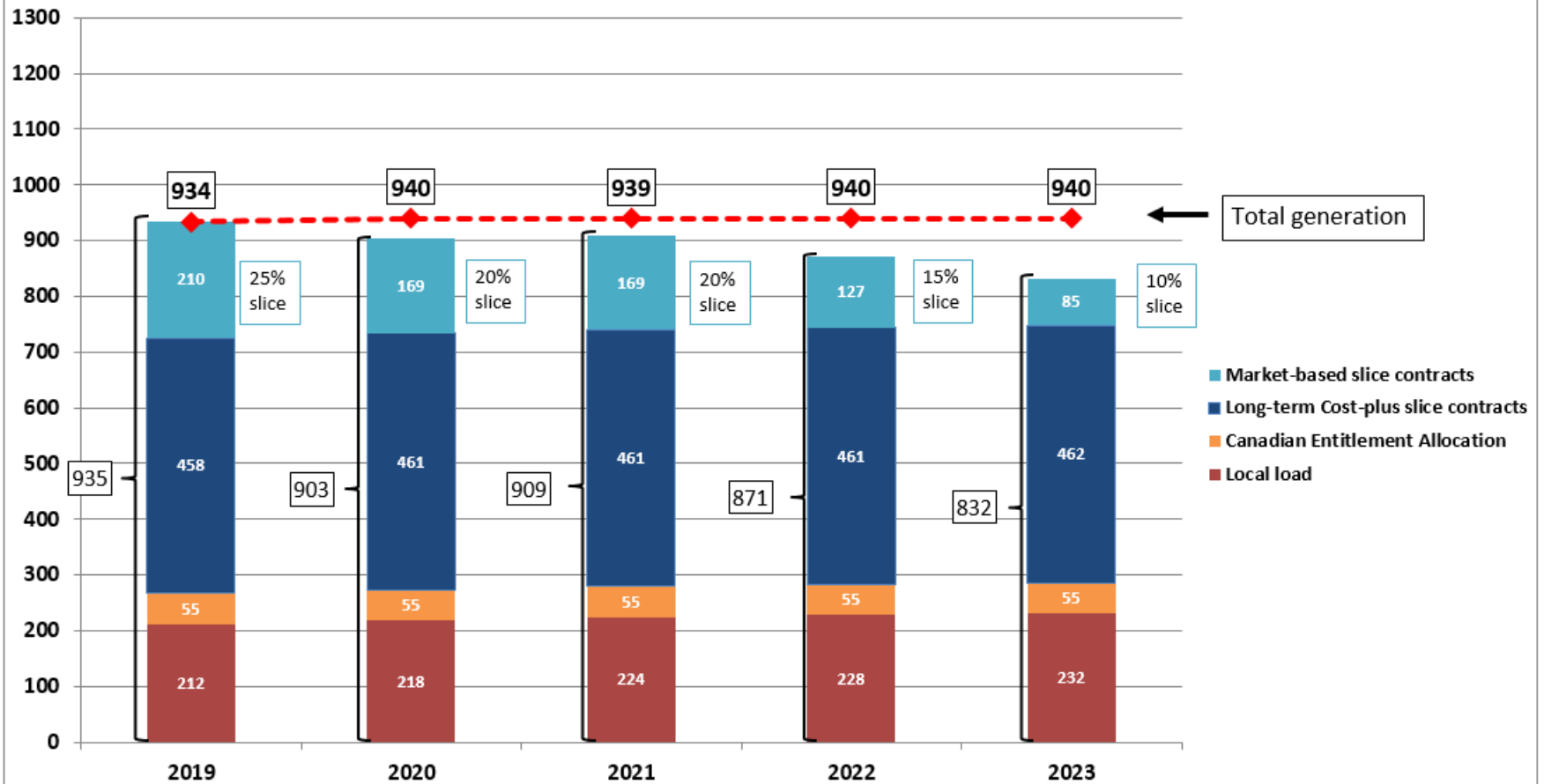
- We have very limited inventory from our existing resources in the next 1-3 years due to forward sales
- We can purchase from market to provide service and pass through to customer
- Market purchases will require providing ancillary services (under development) from PUD system to assure reliability
- Pricing of market options is likely to be comparable to PUD fully allocated costs

UNIQUE ENERGY PRICING SITUATION



Stress water (1 in 20)

Energy Obligations, aMW
(does not include block sales)



3. Transmission and Distribution

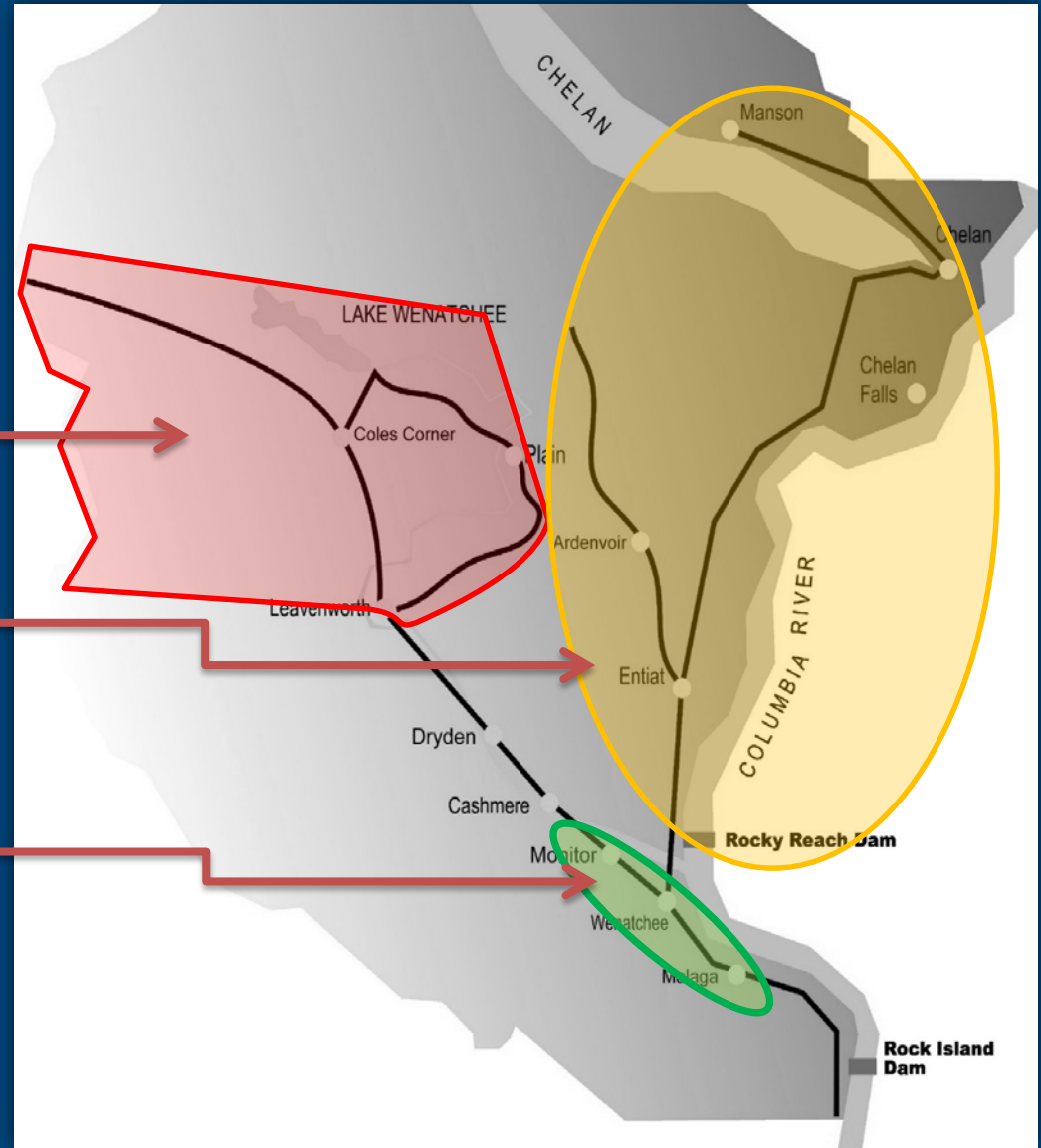
- Evaluating capacity availability without new investment
- Assumes room for organic (non-cryptocurrency) load growth for 5 years in distribution and 10 years in transmission
- Reflects current system conditions; does not include existing HDL requests which are on hold for moratorium

Transmission System Availability

System Expansion Infeasible
North of Leavenworth

Extreme High Cost for System
Expansion North of Rocky Reach

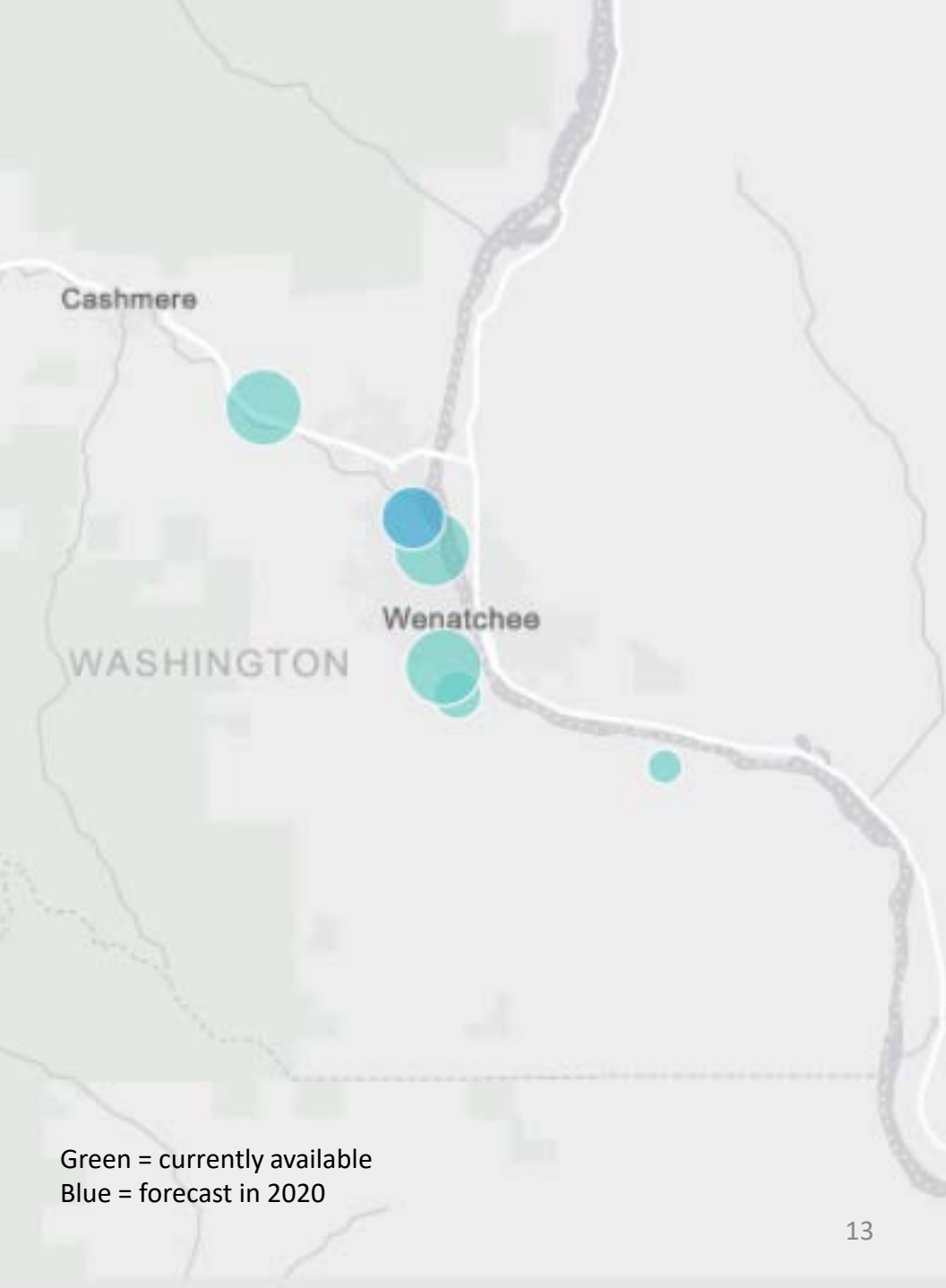
Potential Capacity* Available for
System Expansion in
Monitor/Wenatchee/Malaga area
- further studies are underway
(provided zoning supports load
type)



*Not considering Distribution capability

Substation Availability

- Substation capacity does not equate to a single location, subject to engineering study
- All regular line extension costs and increased upfront charges will be required
- District discussing rate & contract mechanisms to ensure infrastructure costs associated with load are recovered
- Evaluating lowering contract/rate schedule threshold to less than 5 MW



Distribution Availability

- There are no locations capable of connecting over 5MW
- Substation construction options being evaluated -
 - **Option 1:**
 - District constructs, customer funded
 - Once on the schedule with site selected, typically \$3-5M, 3-5 year design/construction timeline
 - **Option 2:**
 - Requester facilitated and funded construction, likely operated by District
 - Cost impacted by timeline
 - Built to District standards and specifications
 - **Option 3:**
 - Wait until District planned construction, upfront charges apply

Infrastructure Availability

Summary

- **Transmission:** We have pockets of available capacity and areas where there are severe constraints, further studies are underway
- **Distribution:** There are a few areas with small amounts of available capacity but most areas of the County would require distribution system construction to serve cryptocurrency expansion

4. Coordination with Planning Entities

- Continued County and municipal engagement efforts will focus on coordination of planning & zoning expectations
- Communicate available capacity areas to planning entities
- Early indications:
 - Cryptocurrency in residential areas is not desired
 - Using growth capacity for mining limits local growth flexibility
 - Consider creating cryptocurrency zones

Next Steps

- Work underway:
 - Reviewing application, contracting and cost recovery approaches
 - Defining processes and rates to support market purchases where all risk is borne by cryptocurrency customer
 - Refining analysis for location of transmission availability
- Engage with cryptocurrency applicants to determine level of interest given our pricing structure and inventory

Public Comment





Staff Recommended Motion

In order to allow enough time for the Commission and staff to finish planning related to virtual and crypto-currency loads move to:

- Maintain the moratorium previously adopted on March 19, 2018 and confirmed by Resolution No. 18-14234, based upon the factors set forth in the resolution and on staff presentation on May 14, 2018, pending the outcome of the Commission planning decisions; and
- Set a further public hearing for August 6, 2018