



PoC Using new IBM MAS8 Asset Health - at Chelan County PUD



CHELAN COUNTY
www.chelanpud.org

October 18, 2023

Presenters

- Ray Hahne
- Senior Maximo Consultant / Project Manager
- Total Resource Management, Inc (TRM)
- Alexandria, Virginia
- Telephone: (509) 630-5062
- E-mail: ray.hahne@trmnet.com

- Maryann Wood
- Systems Support Coordinator
- Chelan County Public Utility District
- Telephone: (509) 661-4004
- E-mail: todd.walsh@chelanpud.org

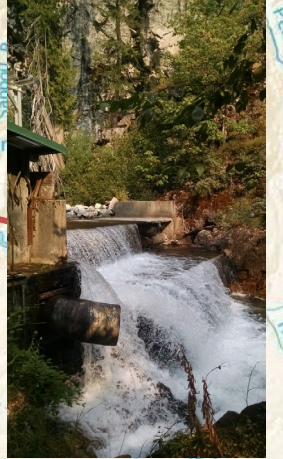
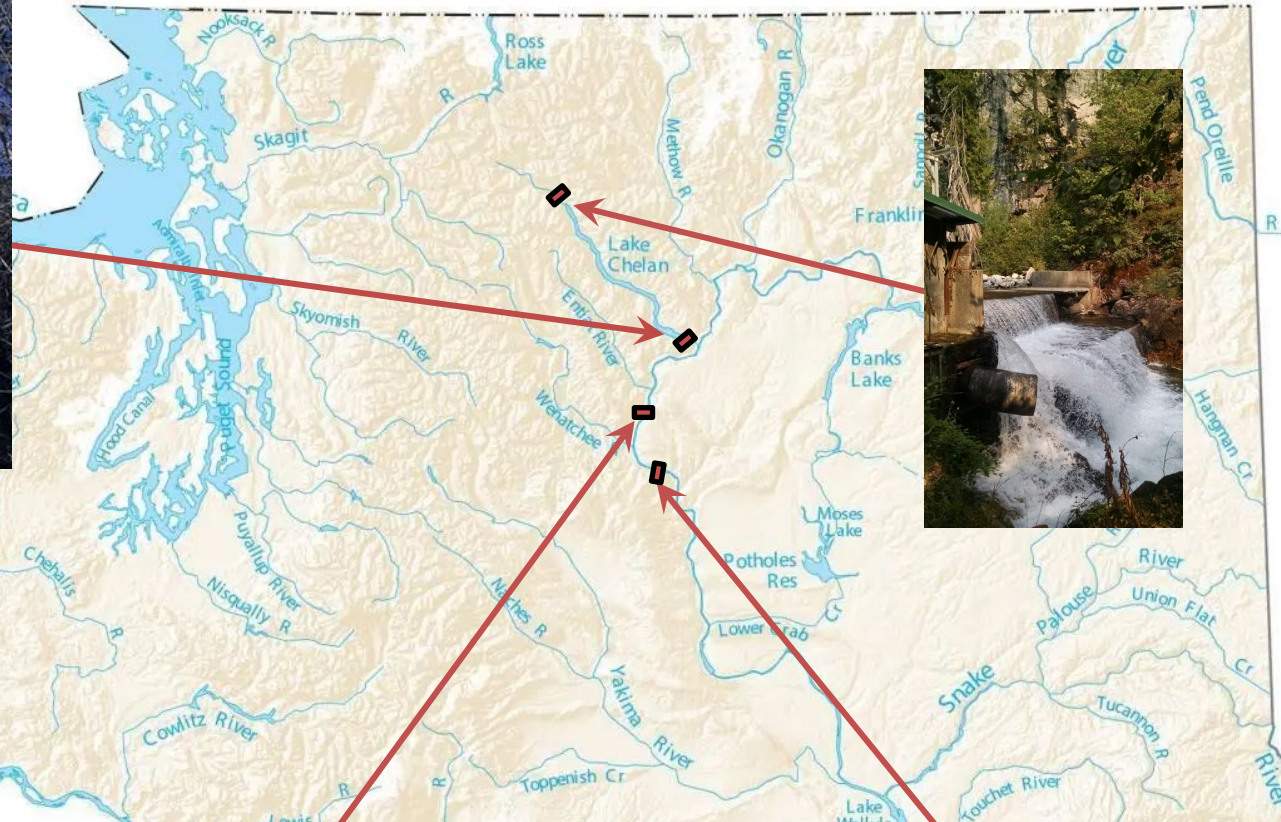
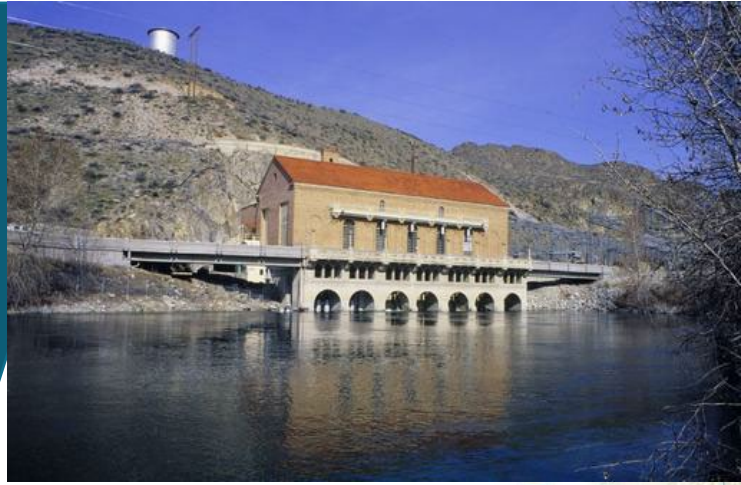


Presentation Topics

This presentation follows up from the 2022 topic presented by Chelan PUD- on capturing condition assessments using Maximo Meters:

- Review - Chelan PUDs Asset Management Program
- Review - Using Maximo for condition assessments
- Live demo of IBM Asset Health module

About Chelan PUD



Powerhouses:

Rocky Reach: ~1300MW, 11 Units, 1967

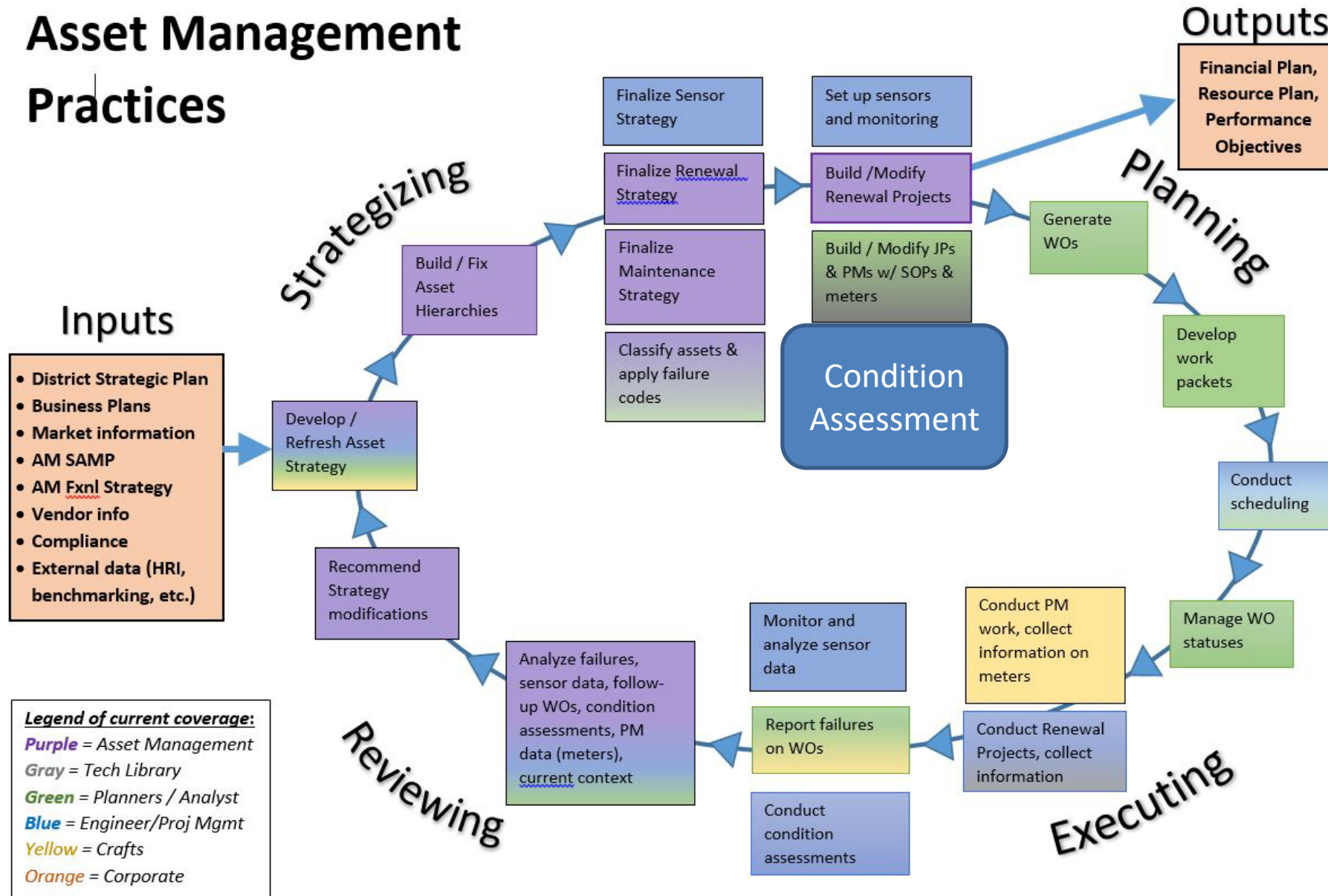
Rock Island: ~640MW, 19 units, 1933/1979

Chelan: ~65MW, 2 units, 1927

Stehekin: ~850kW, 1 hydro, 3 diesel, 1963



Asset Management Practices



HydroAMP Asset Management Standards

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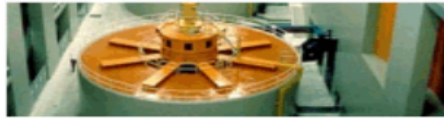


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Hydropower Asset Condition Assessments



Successful strategic planning for capital investments in existing hydropower facilities requires consideration and the balancing of many factors, including the risks and consequences of equipment failure. The hydropower community has long recognized the importance of accurate assessments of equipment condition in order to make informed and sound capital investment planning and management decisions. Seeking to improve the evaluation and documentation of hydroelectric equipment condition, industry leaders have partnered to create the Hydropower Asset Management Partnership (hydroAMP). As part of CEATI's Hydraulic Plant Life Interest Group, which is

comprised of over 60 hydroelectric utilities, the hydroAMP Steering Committee is managing hydroAMP for its current users by assisting in its continued development and guiding its future enhancements.



CHELAN COUNTY

Condition (Asset Health) Assessments

- Monitoring is a specific reading
- Assessment is using the other operating information to assign scores that represent the current condition of different attributes
 - Age
 - Maintenance History
 - Physical Inspection
- We start with a Tier 1 Assessment and conduct a Tier 2 assessment if more information is needed to prioritize any necessary maintenance
 - Tier 1: Relies on operational history and information gathered during routine maintenance
 - Tier 2: Additional tests and inspections if needed to determine urgency

Condition Index Scoring

Condition Index	
8 to 10	Asset expected to continue operating under normal conditions. Continue current O&M and repeat condition assessment on normal frequency.
5 to 8	Medium level of confidence the asset will continue operating under normal conditions. Continue current O&M. Consider Tier 2 test to further evaluate risks. Minor maintenance may be necessary.
2 to 5	Asset may not perform normally. Expect restricted operation and/or non-routine maintenance. Perform Tier 2 tests.
0 to 2	Expect significant operation restrictions and/or extensive non-routine maintenance. Perform Tier 2 test. Evaluate replacement.

Use Meters Instead - New Meter Type and Groups

List Meter Group

Meter Group: H.22.1 Balance of Plant Condition Meters Condition Meter Group? ←

Meters in Group [Filter](#) > 1 - 8 of 10 >

Sequence	Meter	Description	Meter Type
> 1	AMCI-0.0	> Condition Indicator - Condition <input type="checkbox"/>	AMCI ←
> 2	AMCI-1.0	> Condition Indicator - Tier 1 Condition <input type="checkbox"/>	AMCI
> 3	AMCI-1.1	> Condition Indicator - Age <input type="checkbox"/>	AMCI
> 4	AMCI-1.2	> Condition Indicator - Maintenance Hist <input type="checkbox"/>	AMCI
> 5	AMCI-1.3	> Condition Indicator - Operational Perfo <input type="checkbox"/>	AMCI
> 6	AMCI-1.4	> Condition Indicator - Physical Inspectic <input type="checkbox"/>	AMCI
> 7	AMCI-2.0	> Condition Indicator - Tier 2 Adjustment <input type="checkbox"/>	AMCI
> 8	AMCI-RWA	> Condition Indicator - Real World Adjust <input type="checkbox"/>	AMCI

New Row

Custom Condition Assessment Screens

- List
- Asset
- Spare Parts
- Safety
- Meters
- Condition Meters
- Condition Assessments
- Specifications
- Related Records
- Attachments
- Map
- Log

Asset: 13181 Pump: 1, Water Suppr Sys, RRPB Status: OPERATING Manufacture Date: Manufacture Age: 0

Condition Meter Group: H.22.1 Balance of Plant Condition Meters Installation Date: Service Age: 0

Condition Assessments Filter 1 - 1 of 1

Meter	Description	Reading	Pending?	Assessment Date	Assessor	Read Notes
AMCI-0.0	Condition Indicator - Condition	9.300	<input checked="" type="checkbox"/>	10/10/2022 12:00 AM	060912	

New Row

Condition Indices & Indicators for Assessment Dated 10/10/2022 12:00 AM 1 - 9 of 9

Sequence	Meter	Description	Reading	Reading Date	Assessor	Read Notes	Previous Reading	Previous Date	Previous Assessor
2	AMCI-1.0	Condition Indicator - Tier 1 Condition	9.300	10/10/2022 12:00 AM	060912				
3	AMCI-1.1	Condition Indicator - Age	3.000	10/10/2022 12:00 AM	060912				
4	AMCI-1.2	Condition Indicator - Maintenance History	3.000	10/10/2022 12:00 AM	060912				
5	AMCI-1.3	Condition Indicator - Operational Performance	3.000	10/10/2022 12:00 AM	060912				
6	AMCI-1.4	Condition Indicator - Physical Inspection	2.000	10/10/2022 12:00 AM	060912				
7	AMCI-2.0	Condition Indicator - Tier 2 Adjustment		10/10/2022 12:00 AM	060912				
9	AMCI-Q1	Condition Indicator - Scope of Assessment		10/10/2022 12:00 AM	060912				
10	AMCI-Q2	Condition Indicator - Confidence of Evaluator		10/10/2022 12:00 AM	060912				
8	AMCI-RWA	Condition Indicator - Real World Adjustment		10/10/2022 12:00 AM	060912				

IBM MAS Health PoC Demo – Visualizing Asset Health

The screenshot displays the IBM MAS Health PoC interface. On the left, a table lists 12 assets of type 'PRODUCTION' at location 'HYDRO1'. The table columns include Asset ID, Type, Location, Health Hydro, Scope of Ass..., Confidence in..., MEGGER, Installation Date, Age in Years, and Total Cost. On the right, a detailed view for asset 13218 is shown, featuring a 'Health (PoF)' gauge at 100%, 'Consequence' and 'Risk' indicators, 'RUL' (Useful life is at 0%) and 'Age' (51.4 years) metrics, and a 'Score details' section with a total score of 2.32.

Asset	Type	Location	Health Hydro ...	Scope of Ass...	Confidence in...	MEGGER	Installation Date	Age in Years	Total Cost
12005	PRODUCTION	HYDRO1	3	5	5	3	10/09/1996	26.8	0.00
12006	PRODUCTION	HYDRO1	4	5	5	1			
12007	PRODUCTION	HYDRO1	3	5	5	5			
12008	PRODUCTION	HYDRO1	4	5	5	5			
12009	PRODUCTION	HYDRO1	4	5	5	5			
12010	PRODUCTION	HYDRO1	4	5	5	5			

Assets / 13218

PRODUCTION HYDROELECTRIC PROJECT - Proof of Concept

Health (PoF) 100%

Consequence [Yellow Warning]

Risk [Yellow Warning]

RUL Useful life is at 0%

Age 51.4 years

Custom scores

- Health Hydro...** Good 2.32 (▲ 2%)
- Scope of Ass...** Poor 2 (0%)
- Confidence i...** Poor 1 (0%)
- MEGGER** No Megger Reading 5 (0%)

Asset information

Asset scores

Score details

Scoring: Health Hydro POC 2.32 as of 3:40 PM on 7/27/23 Scoring Group: Power Transformers

Score	Contributor
2	AMCI_1.1
1	AMCI_1.2
1	AMCI_1.3
3	AMCI_1.4