



*Serving our customers*

# Wholesale Trading Overview

## Resource Portfolio and Operations

**TACOMA POWER**  
TACOMA PUBLIC UTILITIES

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## Team Organization Overview

**TACOMA POWER**  
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### Resource Operations & Trading

**Energy Trading & Marketing**

Manager, Power Marketing  
Joy Lechty

- Term Energy Trader  
Quinn Cosgrove
- Day Ahead Energy Trader  
Gabrielle Glynn
- Day Ahead Energy Trader  
Philip Coates
- Real Time Energy Trader Lead  
Casey Flood
- Real Time Energy Trader  
Elaina Hettlick
- Real Time Energy Trader  
Garrett McCauley
- Real Time Energy Trader  
Andrew Pham
- Real Time Energy Trader  
Ryan Espedal
- Real Time Energy Trader  
John McGraw
- Real Time Energy Trader  
Alicia Arzate

**Resource Operations**

Asst. Power Manager  
Todd Lloyd

Manager, Resource Operations  
Leah Marquez-Glynn

- Lead Resource Op Analyst  
Hsin Ho
- Resource Operations Analyst  
Linda Shmitt

**Scheduling/ Settlements**

Settlements Analyst  
Sue Clearley

Power Scheduler  
Randi Kartes

Power Scheduler  
Miki Foster

**CAISO Markets Performance Team (CMPT)**

EM Program Manager  
Chris Juchau

- CAISO Market's Sr. Analyst  
Mollise Buchler
- CAISO Market's Sr. Analyst  
Jeff Stafford
- CAISO Settlements Analyst  
Lisa Day
- CAISO Settlements Analyst  
Nicole Blankenship
- Data Scientist  
Vacant

**Power Management System Engineers (PMSE)**

Manager, PM Operational Technology  
Ken Shaffer

- Principal A/S Engineer  
Michael Stamper
- Principal A/S Engineer  
David Cowan
- Principal A/S Engineer  
Daniel Cox
- Senior A/S Engineer  
Mark McCabe
- Engineer in Training  
Mathew Bronson

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## Ops/Trading Responsibilities TACOMA POWER TACOMA PUBLIC UTILITIES



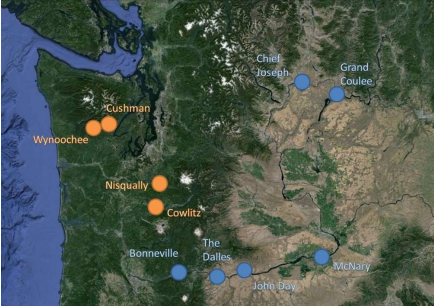
**Todd Lloyd**  
Manager, Resource Operations and Trading

- **Resource Operations (Leah)**
  - Plan and direct the operations of Tacoma Power's hydroelectric resources
  - Manage the operations of the BPA Slice contract
- **Trading and Marketing (Joy)**
  - Term, Day-Ahead and Real-Time Trading
  - Hour ahead through 24 months
  - Mission critical 24x7 Real-Time Trading
- **Scheduling and After-the-Fact (Leah)**
  - Scheduling, after-the-fact accounting, billing
- **Systems Engineering (Ken)**
  - 24x7 support of dedicated Power Management Systems
  - Development of in-house software applications
- **CAISO Markets Performance Team (Chris)**
  - Maximize value of near-term wholesale transactions, including CAISO and EIM
  - Settlements of complex and adjustable (after-the-fact) CAISO transactions. Orders of magnitude more complex than traditional settlements

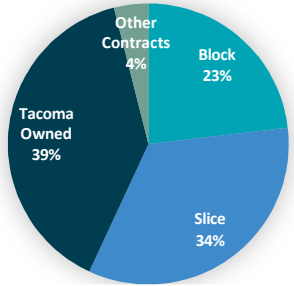
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## Tacoma's Resource Portfolio TACOMA POWER TACOMA PUBLIC UTILITIES



- **Tacoma Owned Resources**
  - 4 hydro projects, 7 powerhouses, 21 generating units
  - 310 aMW of generation under average water conditions
  - 750 MW of capacity
- **BPA Contract**
  - Block = 182 aMW
  - Slice = 265.4 aMW (avg water)
  - Slice gives the rights and responsibilities of the Federal Operation System
- **Other Contractual Resources**
  - Columbia Basin Hydro = 28 aMW, March through September
  - Priest Rapids = 2.5 aMW

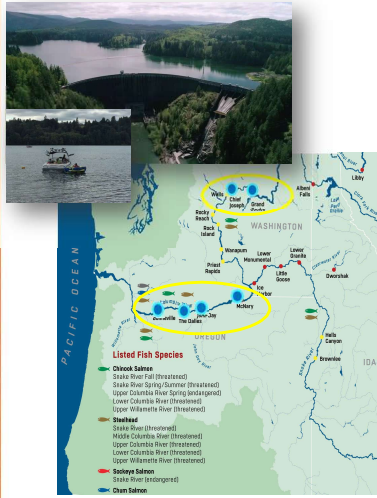


Category	Percentage
Tacoma Owned	39%
Slice	34%
Block	23%
Other Contracts	4%

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# Resource Operations Challenges **TACOMA POWER** TACOMA PUBLIC UTILITIES



- **Physical Limitations**
  - Generation, reservoir levels, flows
- **Human Safety**
  - Flood control (Cowlitz, Wynoochee)
  - Voluntary flood reduction (Cushman, Nisqually)
  - Limit rate of flow increases
- **Environmental Stewardship**
  - Downstream flows for fish/environment
  - Limit rate of river flow changes
- **Recreation**
  - Summer refill for recreation
  - Limits on reservoir levels for boating

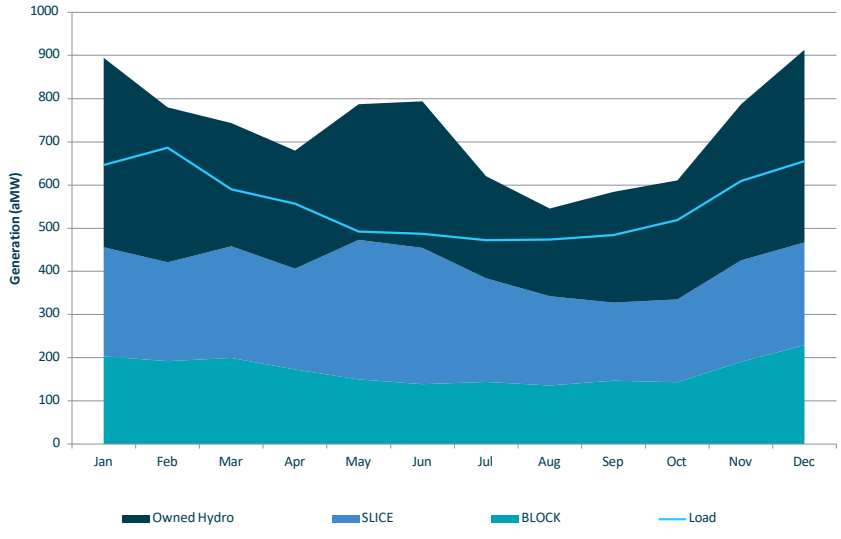
## Optimize Generation and Market Interaction

- Once all other constraints have been met, focus on optimizing resources to maximize value
- Work with Trading to identify and capitalize on market opportunities

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# Resources and Loads **TACOMA POWER** TACOMA PUBLIC UTILITIES



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## Why We Trade Power

- **System Reliability**
  - Balance resources (supply) with load (demand)
  - Assure resource adequacy, especially during extreme events (heat and cold)
- **Hedging (Term Transactions)**
  - A portion of the expected surplus sold in advance
  - Provides price certainty
  - Helps with liquidity in event that PNW hydro-based utilities selling at same time
- **Fine Tune Load/Resource Position (Day-Ahead and Real-Time)**
  - Matching loads and generation gets more and more precise
  - Majority of transactions done Day-Ahead
  - Trading volume can be high during rain and runoff events
  - Real-Time Trading balances loads and generation 24/7/365



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## Trading Policy and Philosophy

- **Hedging Program**
  - All wholesale transactions are in full compliance with the Energy Risk Management Policy and Hedging Program, including allowed quantity, approve counterparties, and necessary approvals
- **Volume of Sales**
  - On a Term Trading basis, we sell an amount of power that we are confident is surplus to projected load
  - We limit sales to our available capacity during possible extreme events, such as cold snaps or heat waves. We do not plan to rely on purchases from the market to meet peak loads. This limits the quantity of forward sales we will make.
- **We Do Not Speculate**
  - We sell a portion of our expected surplus. Our risk policy does not allow power transactions to be used as an investment or for speculative purposes

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## How We Trade Power




TACOMA PUBLIC UTILITIES

<div style="background-color: #4b3621; color: white; padding: 10px; text-align: center; margin-bottom: 10px;"> <b>Term Market</b> </div> <ul style="list-style-type: none"> <li>Duration: monthly or quarterly</li> <li>Authorized to trade up to two years out</li> <li>Bilateral transactions</li> <li>Trade through a broker or electronic platform, Intercontinental Exchange (ICE)</li> </ul>	<div style="background-color: #c85130; color: white; padding: 10px; text-align: center; margin-bottom: 10px;"> <b>Day Ahead Market</b> </div> <ul style="list-style-type: none"> <li>Duration: next-day through balance-of-month (BOM)</li> <li>Matches expected generation and loads</li> <li>Bilateral transactions</li> <li>Transactions on ICE, broker or phone</li> </ul>	<div style="background-color: #f4a460; color: white; padding: 10px; text-align: center; margin-bottom: 10px;"> <b>Real Time Market</b> </div> <ul style="list-style-type: none"> <li>Duration: hour-ahead through balance-of-day</li> <li>24/7/365</li> <li>Precisely balances actual generation and loads</li> <li>Bilateral transactions</li> <li>Transactions on ITAP or phone</li> <li>Maintain system balance and manage generation resources</li> </ul>	<div style="background-color: #f4a460; color: white; padding: 10px; text-align: center; margin-bottom: 10px;"> <b>Energy Imbalance Market</b> </div> <ul style="list-style-type: none"> <li>Duration: sub-hourly</li> <li>Organized market with Tacoma submitting bids to CAISO</li> <li>EIM market operator automatically dispatches generation that is economic per the bid</li> </ul>
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## Real-Time Trading



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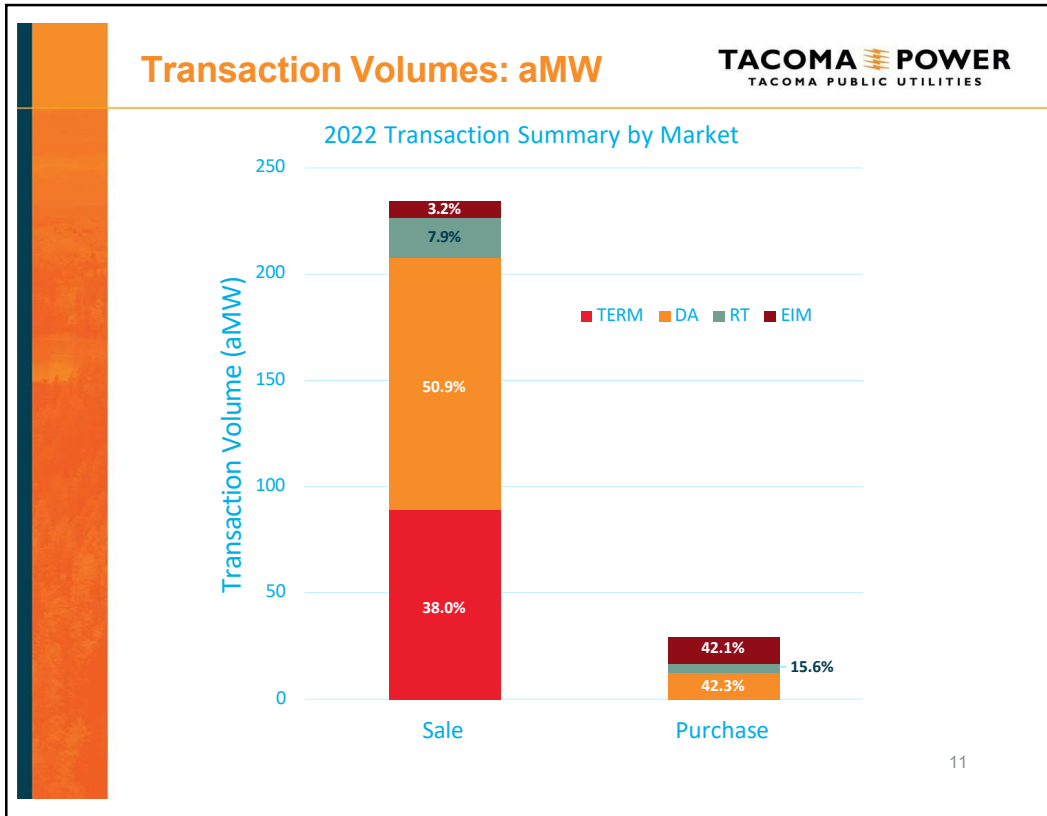
- Responsibilities**
- Staffing critical operations on a 24x7 basis.
- Six Real-Time Traders work 12.25 hour rotating shifts on a 6-week schedule, always on premise
- Managing reservoirs, generators, and our system or balance generation with load
- Responsible to operate reliably under all conditions, from dry, low flow periods to too much water, maneuvering to avoid spill conditions & ensure flood control - the RTET must maintain awareness of every constraint while continually optimizing the operation of the system
- Finding opportunities to operate economically while demonstrating careful stewardship of Tacoma's hydro assets
- Hydro generators akin to natural batteries, seeking opportunities to buy low and sell high to benefit the ratepayer



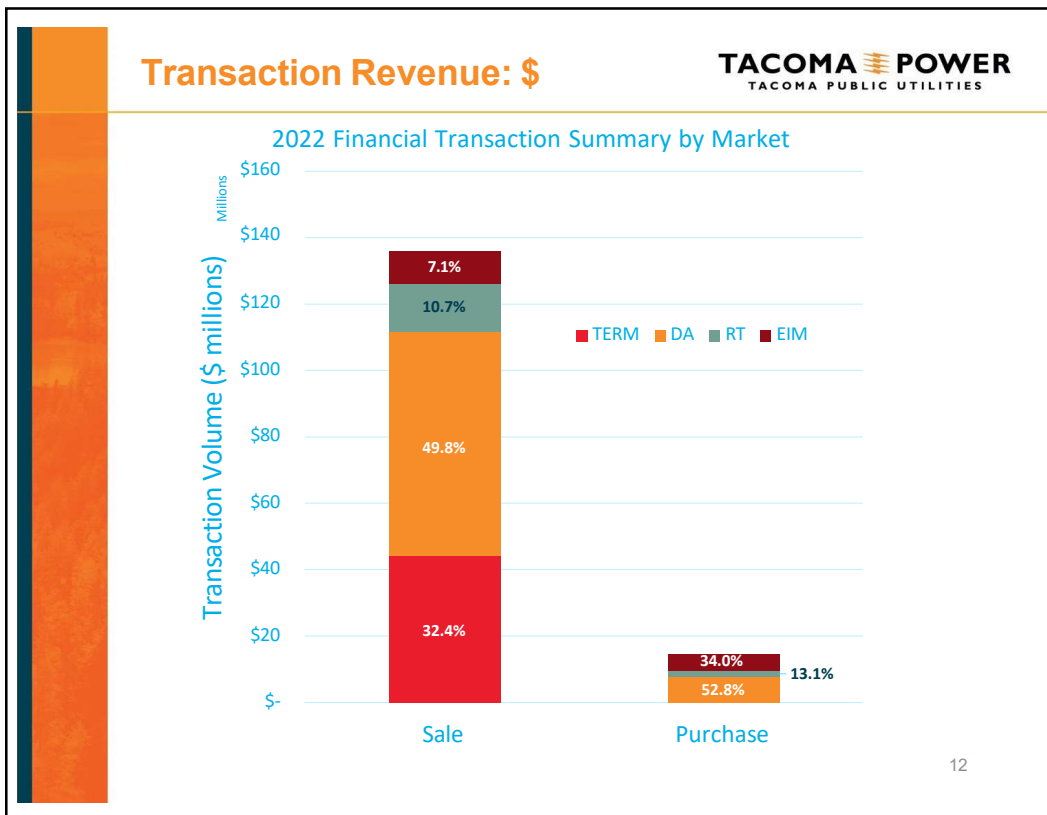
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# Transaction Revenue: \$

