

Rathdrum Prairie Future Water Demand Projections

**Rathdrum Prairie
CAMP Advisory Committee Meeting**

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Outline

- **Project Team**
- **Why project water demand?**
- **Describe approach to projecting water demand**
- **Preliminary results**
- **Discussion**



Project Team

- **SPF Water Engineering**
 - Christian Petrich
 - Jennifer Sukow
 - Mike Martin
- **AMEC**
 - Chuck Brendecke
 - Lee Rozaklis
 - Cam Stringer
 - Jean Marie Boyer
 - Subhrendu Gangopadhyay
- **Idaho Economics**
 - John Church
- **Taunton Consulting**
 - Bob Taunton



Why project water demand?

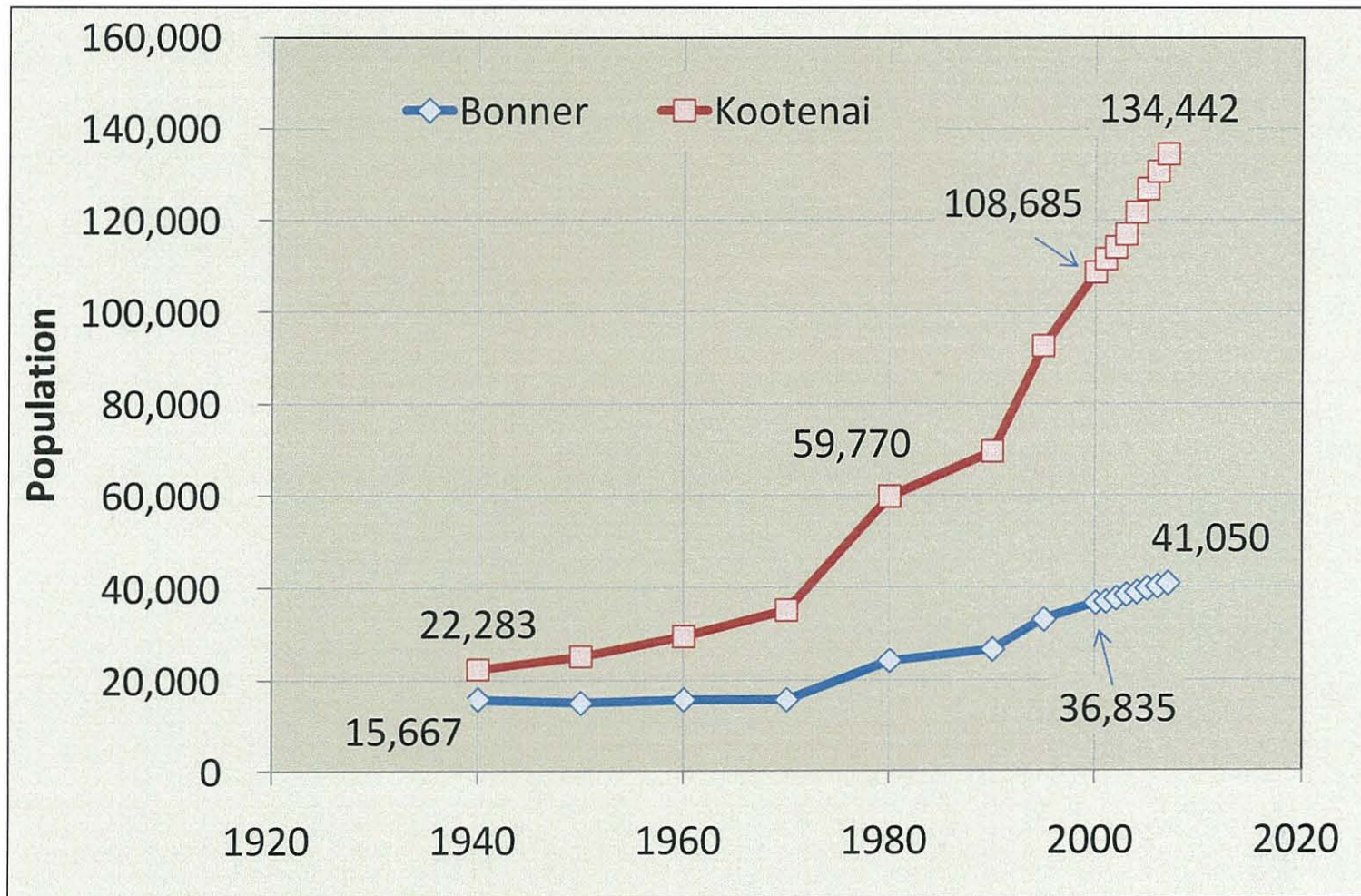
- Evaluate existing supply in context of projected demand
- Evaluate alternatives for meeting projected water demand
- Develop long-range plans for conjunctively managing surface and ground water resources
- Evaluate potential effects of climate change, conservation and re-use on future water demand and supply



Approach to Projecting Water Demand

- Compile historic population data
- Project future population and employment growth
- Estimate current water demand (by sector)
- Project future water demand
 - Domestic, commercial/industrial, irrigation uses
- Adjust demand based on
 - Climate variability
 - Water conservation potential
- Use “scenarios” to describe possible future water-use outcomes
- Develop “best guess” of future water use

Historic Population Growth

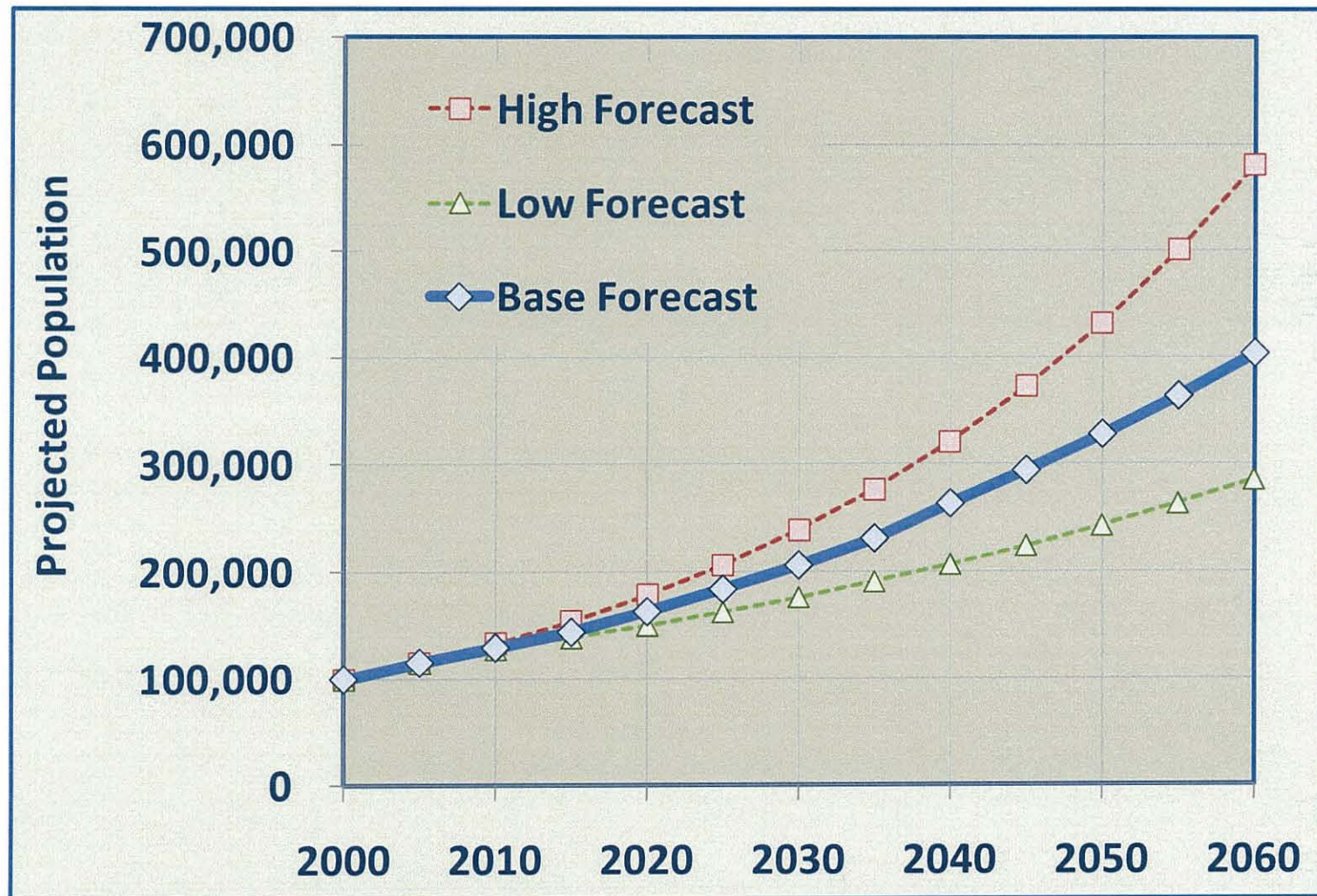




Future Population Growth

- **Population and job growth projections developed with an econometric model**
 - **Based on national and regional economic trends**
 - **Basic and secondary job growth**
- **Describe and/or assume**
 - **Spatial distribution**
 - **Density**

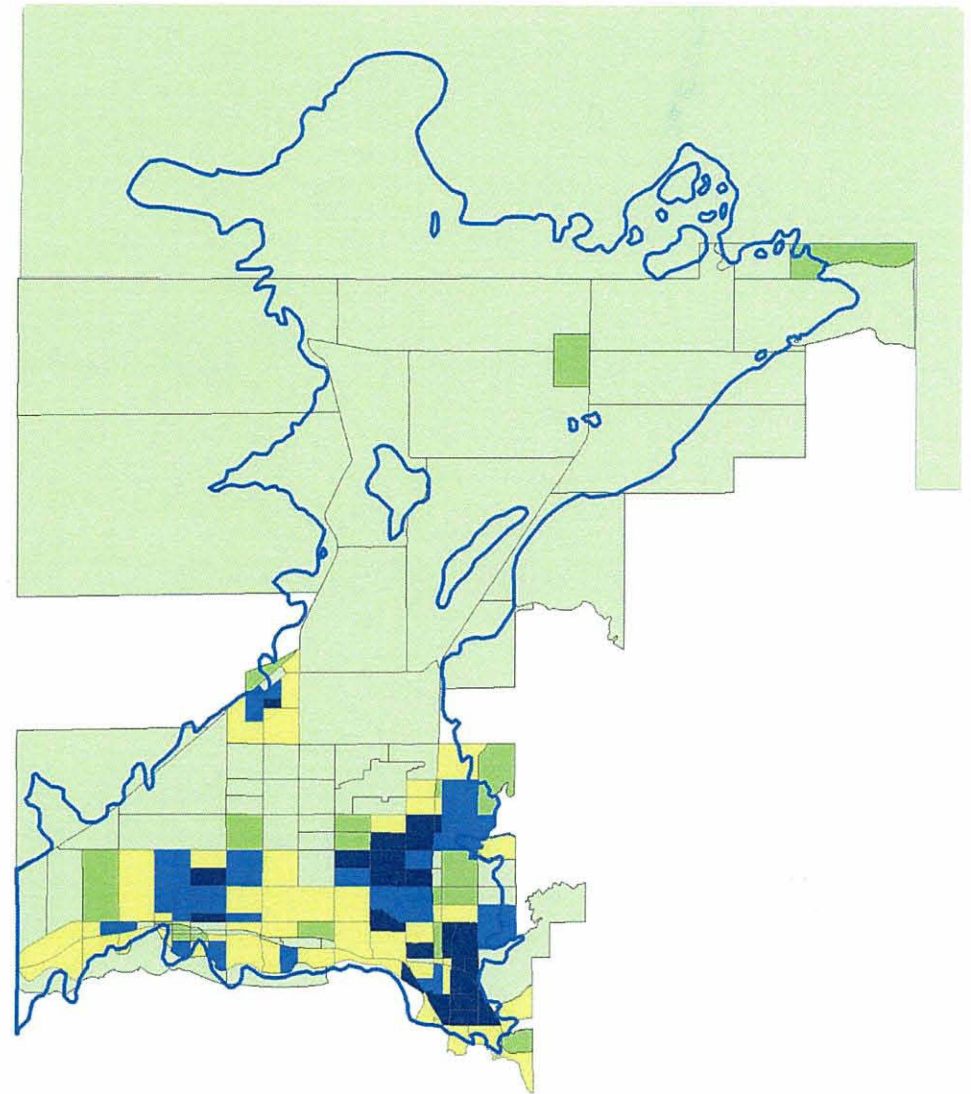
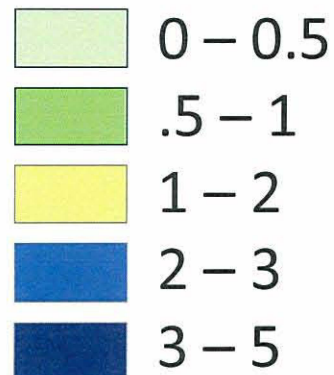
Population Forecast



Population Distribution and Density

 Rathdrum Prairie Aquifer Boundary

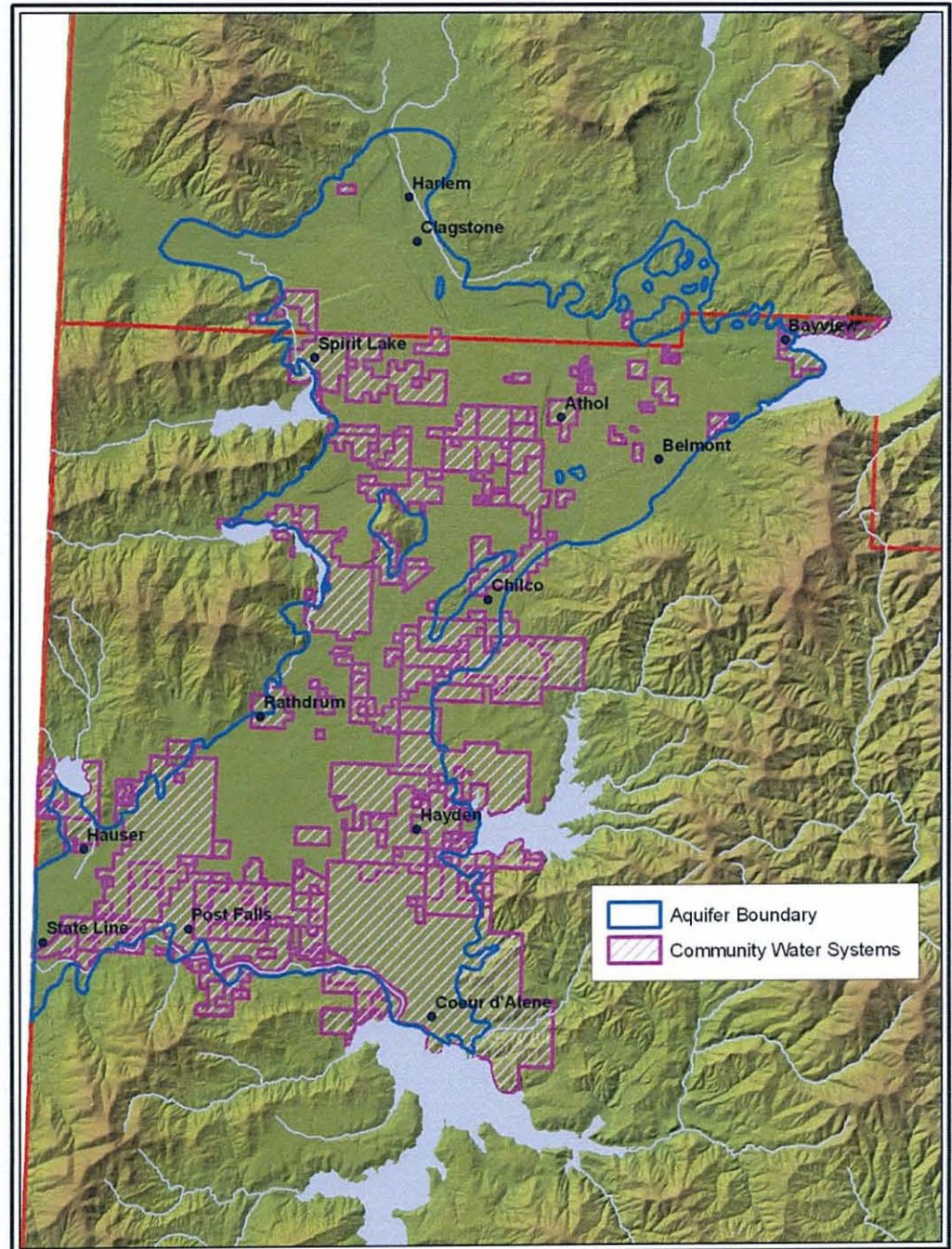
Housing Units per Acre



2030

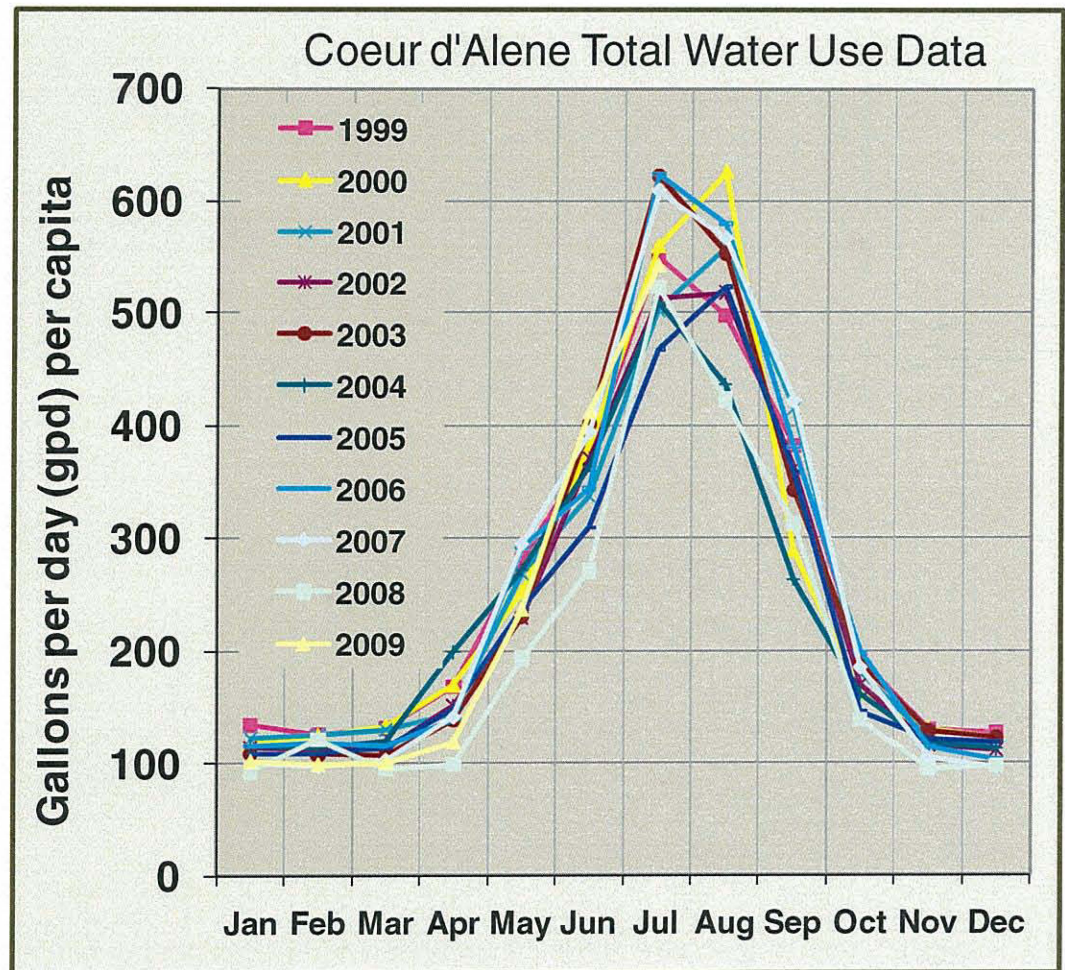
Current Water Use

- Based on
 - Public water system data
 - Employment
 - Water rights
 - Focus on ground water use



Seasonal Use

- **Winter use:**
non-irrigation
(i.e., domestic
use)
- **Domestic use:**
estimated to be
between
170 and 190
gpd/unit
- **Note variability in
irrigation season**





Irrigation Demand

- **Agricultural irrigation estimates based on**
 - **Estimated irrigated acreage**
 - **Average consumptive use per acre**
- **Residential and municipal irrigation**
 - **Estimated irrigated area based on current and future distribution of housing density**
 - **Average consumptive use per acre**



Consumptive Use

- **Consumptive use is that portion of water “lost from the hydrologic system”**
- **Large amounts of pumped water return to**
 - **Aquifer**
 - **Spokane River**



Commercial & Industrial Demand

- **Future water demand based on**
 - **Water demand per employee**
 - **Employment growth estimates**
- **Large-scale water users based on**
 - **Water rights**



Additional Factors

- **Water conservation - potential reductions in domestic and irrigation use**
- **Potential regulatory constraints**
 - **NPDES permitting constraints**
 - **TMDL restrictions**
 - **Possible changes in future ground water quality standards**



Uncertainty

- *“Prediction is difficult, especially about the future”
– Neils Bohr*
- Projecting water use 50 years from now has some uncertainty
 - Existing water use
 - Population projections
 - Housing and irrigation distribution projections
 - Commercial and industrial use projections
- Nonetheless, understanding of possible future water-demand outcomes important for current policy/management decisions



Develop Demand Scenarios

- **Evaluate uncertainty inherent to demographic, economic, and environmental conditions**
- **Test major assumptions**
- **Explore effect of potential water management alternatives on future water demand**
- **Identify “most likely” future water demand outcomes**
- **Monitor projections and actual water use over time**



Status

- **Completed:**
 - Preliminary population projections
 - Data collection for existing water use
- **Currently**
 - Constructing forecasting tool (spreadsheet)
 - Beginning draft report
- **Draft report: February 2010**
- **Final report: March 2010**

Questions?

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