

# International Rectifier Temecula (IRTM)

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Rick Glasmann, Vice President/General Manager



## Wastewater

- IRTM does not have a direct discharge connection
  - IRTM's wastewater TDS concentration ~30,000 mg/liter
  - Wastewater must be shipped via tanker truck to the Inland Empire Brine Line Portal (34 miles roundtrip)
  - Disposed under permit issued by Eastern Municipal Water District and SAWPA
  - Conserving water is important to our survival and maintaining competitiveness

## Brine Line Value to IRTM

- No other local disposal options currently available
  - 50,000 gallons of industrial wastewater are generated each day
  - Inadequate onsite storage capacity
  - Potential shutdown of operations until disposal option solidified
  - Potential loss of \$36M to local economy (over 600 families affected)
- New permits and fees would have to be negotiated (possibly out-of-state)
  - Permitting process may be lengthy
  - Shipping and disposal fees may be cost-prohibitive



## IRTM

- 300,000 square foot facility on a 33-acre site
- 12,000 square foot clean room (test floor)
- Approximately 600 employees
- 99% of the workforce lives within a 60-mile radius
- 67% of the workforce lives and works in the Temecula / Murrieta area
- IRTM generates 46% of \$1B annual revenue
- \$36M salaries back into the local economy

## Product Overview

- Automotive Products
- Energy Saving Products
- Enterprise Power
- Power Management Devices



International  
**IOR** Rectifier

April 2014



## IRTM's Vibratory Shear Enhanced Processing (VSEP)

- High pressure reverse osmosis system
- Installed January 2011 at a cost of \$1.5M
- Only six currently installed in California
- System is capable of a 50% recovery rate
- Reclaimed water is used for:
  - Makeup water for cooling towers
  - Makeup for process exhaust scrubbers
  - Makeup for processes with lower water quality requirements

## Water Reclaim Program Results

- IRTM segregates process waste water streams and operates reverse osmosis systems to reclaim a significant percentage of water requirements
- These reclaim initiatives have resulted in the following:
  - Annual water demand decreased from 91MG to 29MG
  - Annual water reclaim has steadily increased from 0 to 62MG
  - Annual brine water haul-off has dropped significantly from 77MG to 19MG
  - Overall Water Reclaim Efficiency = 68%
  - $(\text{Initial Water Demand} - \text{Current Water Demand}) / \text{Initial Water Demand} = (91 - 29) / 91 = 68\%$



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April 2014



# IR Temecula

Rick Glasmann

04/01/14

Rev 1



International  
**IR** Rectifier

# IR Products and Business Units



## Automotive Products

- Automobiles
- Trucks and Buses
- Hybrids
- Electric Vehicles



## Energy Saving Products

- Industrial
- Appliances
- Lighting
- Audio/Displays
- Alternative Energy



## Enterprise Power

- Servers & Storage
- Notebooks & Desktops
- Netcom
- Gaming
- Consumer Broadband



## HiRel

- Satellites
- Commercial Aviation
- Military and Defense
- Medical Devices
- Heavy Duty Industrial



Power Management Devices

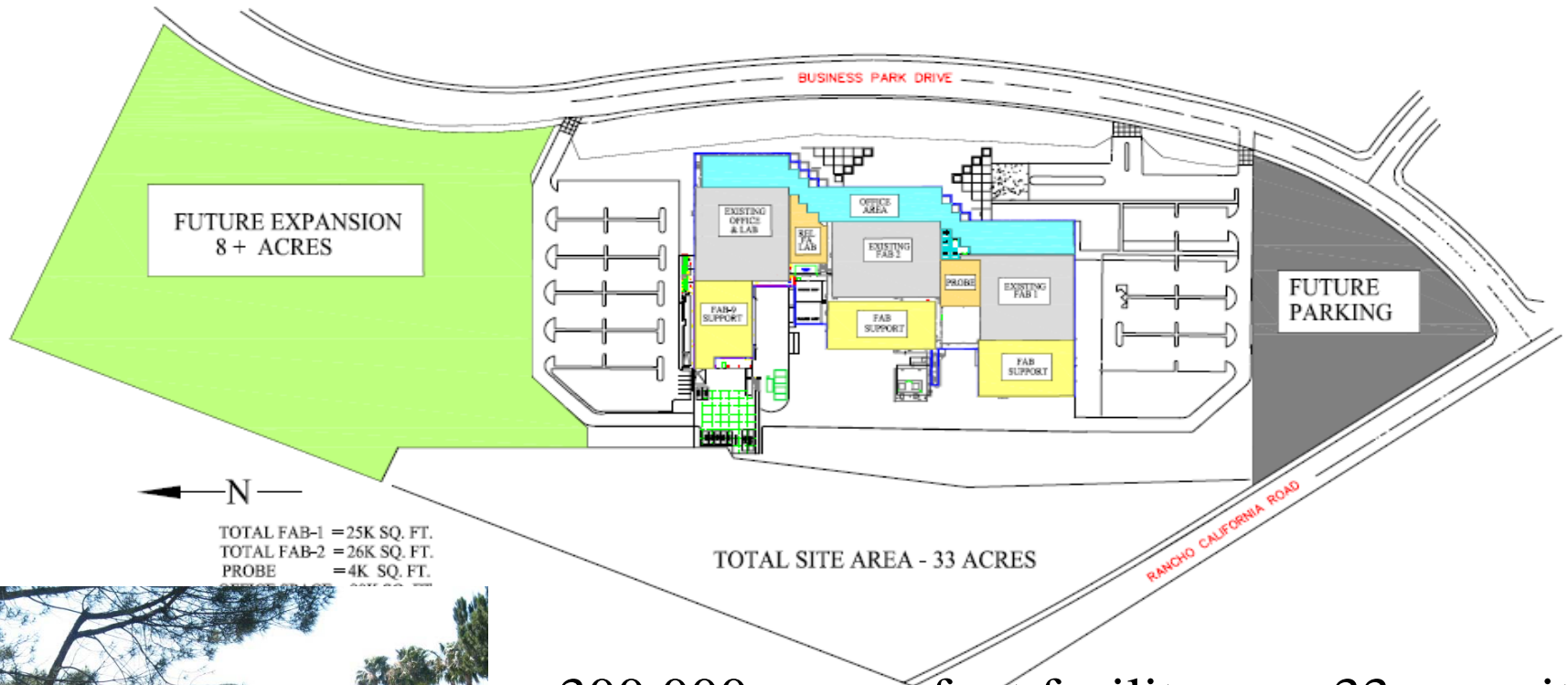


**\$1B + annual revenue**

# Strategically Aligned with Industry Leaders



Automotive	Energy Saving Products	Enterprise Power	HiRel	Power Management Devices



← N —  
TOTAL FAB-1 = 25K SQ. FT.  
TOTAL FAB-2 = 26K SQ. FT.  
PROBE = 4K SQ. FT.



- 300,000 square foot facility on a 33 acre site
- 55,000 square foot Class 100, 150mm production area
- 12,000 square foot Class 10,000 clean room (test floor)

# IR Temecula Employees

- Approximately 600 employees
- 99% of the workforce lives within a 60 mile radius
- 67% of the workforce lives and works in the Temecula / Murrieta area
- IRTM generates 46% of \$1B annual revenue
- \$36M salaries back into the local economy

• Management/Supervisor	97	16.4%
• Engineers	84	14.2%
• Technicians	134	22.6%
• IT / Professionals	63	10.6%
• Operators / Handlers	214	36.2%



# ISO Certification and Regulation

- **South Coast Air Quality Management District (50+ air quality permits)**
- **ISO/TS16949 Certified (Automotive Certification, Intertek)**
- **ISO14001 Certified (Environmental TUEV)**
- **JANS Certified (Defense Supply Center)**
- **Eastern Municipal Water District Outstanding Efforts in Pollution Prevention and Waste Minimization in 1993 (Recognition)**
- **EICC Membership Acceptance 2012**





It is our social responsibility and commitment to support organizations dedicated to improving the community in which we do business.



Helping Those in Need



Blood Donations



Providing Shelter



Encouraging Literacy



Providing Sustenance



Supporting Research

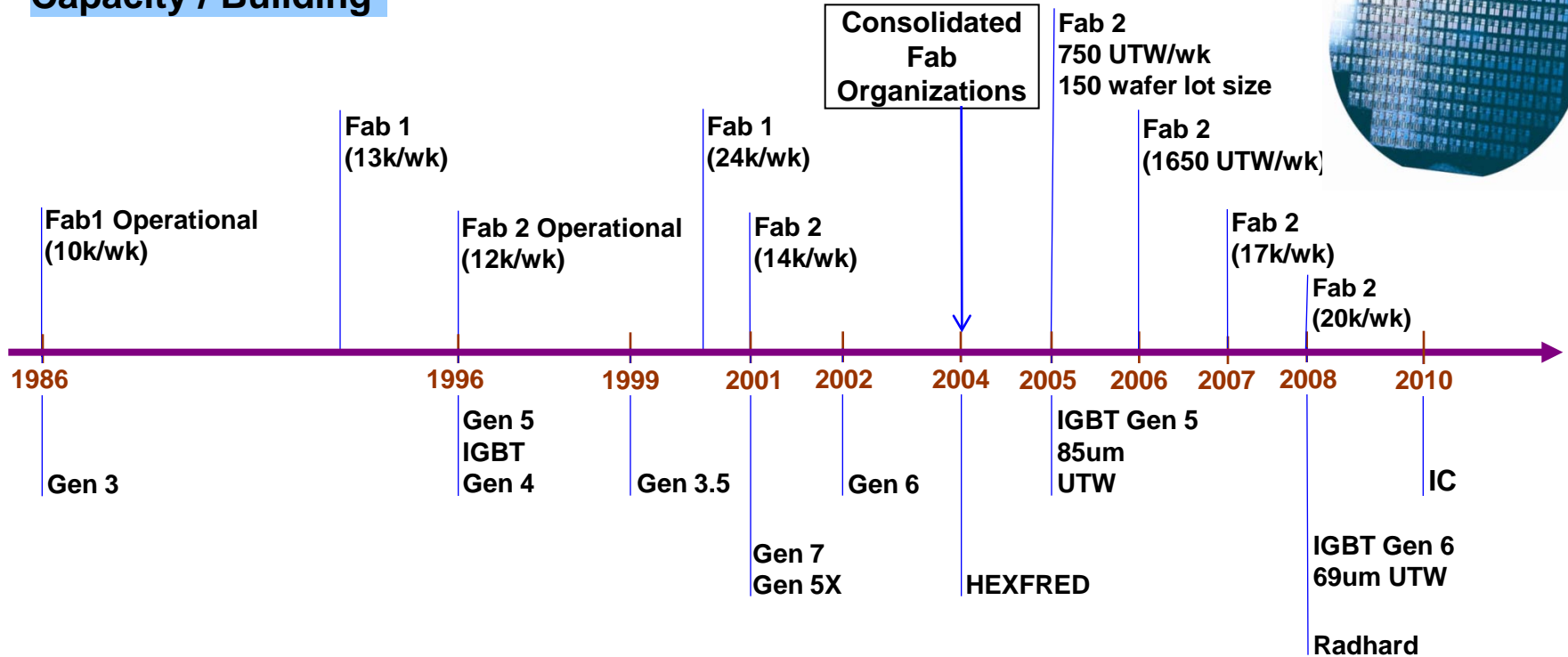
## Community Partners

- Temecula Valley Chamber of Commerce
- EDC of Southwest California
- Southwest California Legislative Council
- Workforce Investment Board
- Southwest California Manufacturing Council

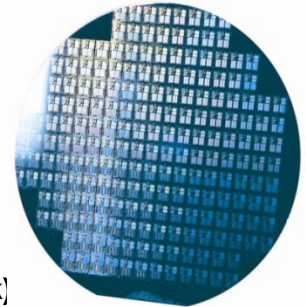
# Site Overview – IRTM History



## Capacity / Building



## Technology



# One Team One Goal

- Customer focused
- People-centered
- Safety, Quality, Delivery, Cost, Morale
- Process oriented



## Accountability

- Daily, weekly, monthly checks
- Total involvement

## Urgency

- Escalation system
- Speed of response

## Leadership

- Zone control
- Teams

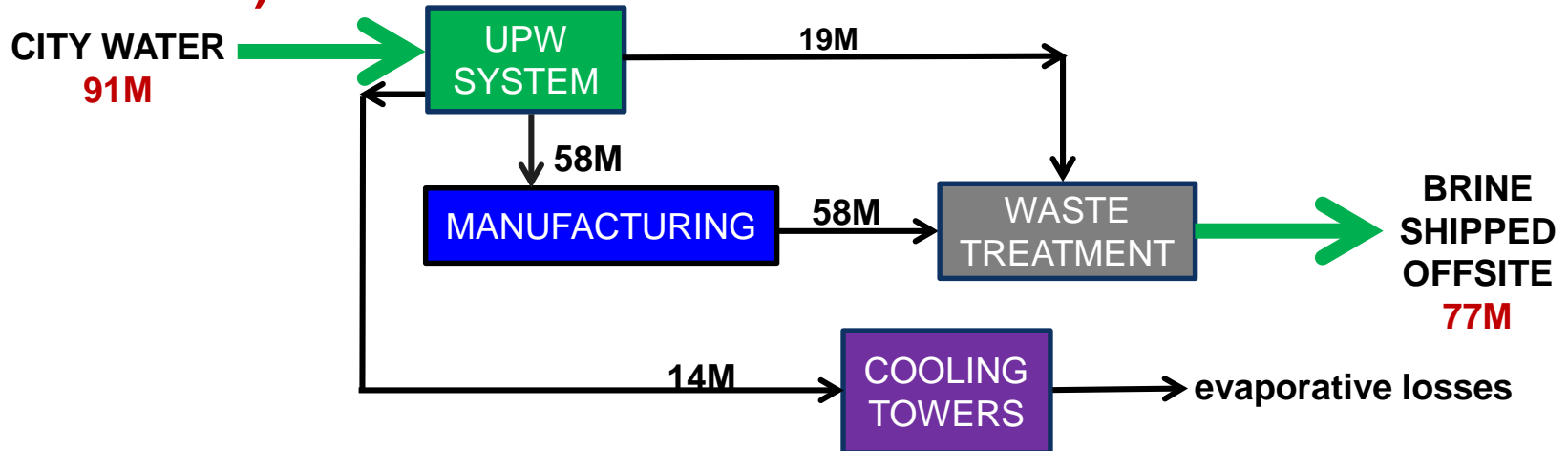
- Focuses on how to best support the customer

- Strive to eliminate waste in all aspects of operations

- Focuses on employee involvement, training, and teams

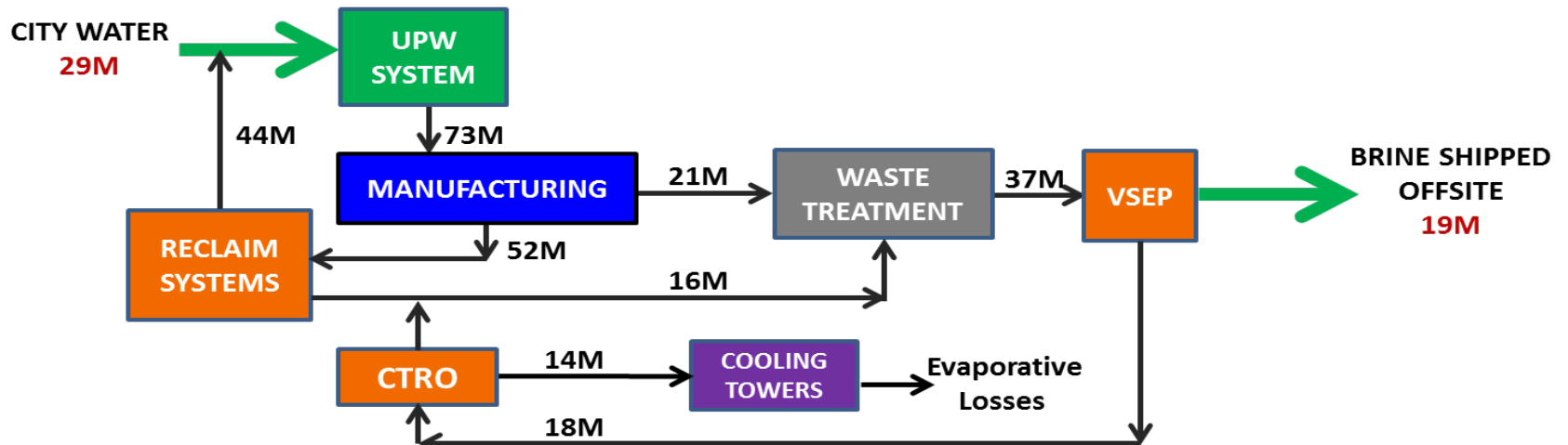
# Background & Initial Water Demand

- **Semiconductor manufacturing is water intensive**
  - Direct industrial wastewater discharge connections are typical in the industry
- **IRTM does NOT have a direct discharge connection**
  - IRTM's Wastewater (brine) TDS concentration ~30K mg/liter
  - Wastewater (brine) must be shipped via tanker truck to the Inland Empire Brine Line Portal
  - Disposed under permit issued by EMWD / SAWPA
  - 34 miles roundtrip
  - Conserving water is important to our survival and maintaining competitiveness
- **IRTM's annual water requirements (without any water being reclaimed):**



# Water Reclaim Program Results

- IRTM segregates process waste water streams and operates reverse osmosis systems to reclaim a significant percentage of water requirements
- The most recent addition is a VSEP System (High Pressure Reverse Osmosis)
- These reclaim initiatives have resulted in the following:
  - Annual water demand decreased from 91M gallons to 29M gallons
  - Annual water reclaim has steadily increased from 0 to 62M gallons
  - Annual brine water haul-off has dropped significantly from 77M gallons to 19M gallons
  - **Overall Water Reclaim Efficiency = 68%**
    - $(\text{Initial Water Demand} - \text{Current Water Demand}) / \text{Initial Water Demand} = (91 - 29) / 91 = 68\%$





- High pressure reverse osmosis system
- **Installed January 2011 at a cost of \$1,500,000**
- Only six current installations in California
- System is capable of a 50% recovery rate
- Reclaimed water is used for:
  - Makeup water for cooling towers
  - Makeup for process exhaust scrubbers
  - Makeup for processes with lower water quality requirements

- Reduced IRTM water demand by 62M gallons
- **Brine line loading reduced from 77M gallons to 19M gallons**
- **Tanker truck loads reduced from 12,000 to 3,000**
  - Eliminates over 300K truck miles / year
    - Vehicle emissions
    - Road wear / tear
    - Road safety / congestion
- **Reduced loading on the brine line may help delay additional capital costs to expand the brine line should future demand exceed existing capacity**
- **Water Reclaim Efficiency is 68%**

# Brine Line Value to IRTM

- **No other local disposal options currently available**
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