

# This presentation premiered at WaterSmart Innovations

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# Results from 3 Dipper Well Replacement Studies

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**Food Service  
Technology Center** 

# 30 Years of Partnership



partners



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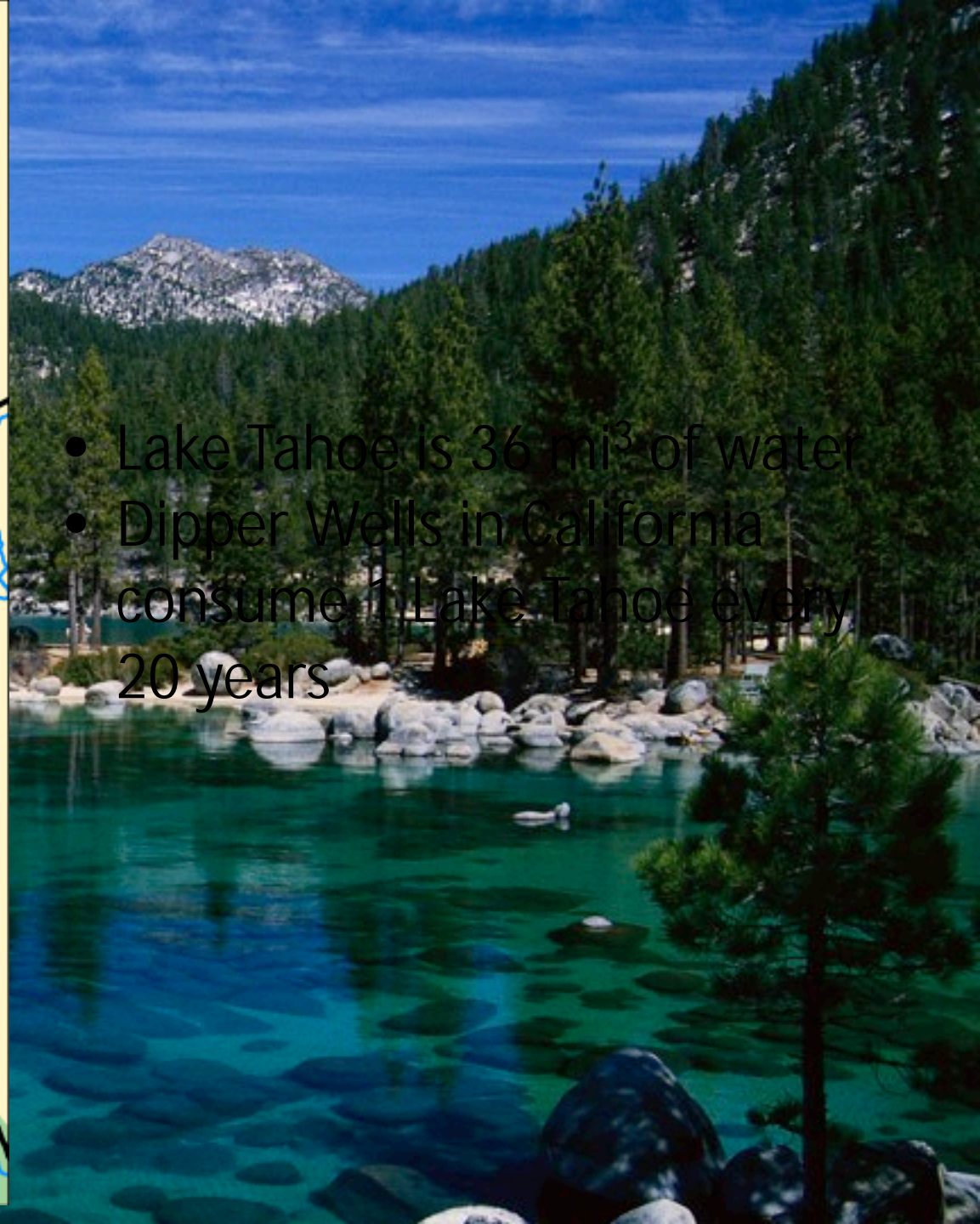




# Total Dip Well Water/Energy Use in CA



- California has 100k dip wells
- Water use from 0.25 to 1 gpm
- Some run 24/7/365
- Up to 1400 gallons per day
- CA estimated total: 75,000 AF/yr



- Lake Tahoe is 36 mi<sup>3</sup> of water
- Dipper Wells in California consume 1 Lake Tahoe every 20 years

# Replacement Technologies Monitored (so far)



Lolsberg i.ScoopShower

- Pressure switch
- Adjustable head

ConserveWell Heated Utensil Holder

- Manually replace water
- 4h timer





# Case Study: Jamba Juice Emeryville

- Daily Averages:
  - Time = 12.5 hr
  - Water consumed = 167 gal
  - Flow Rate = 0.25 gpm





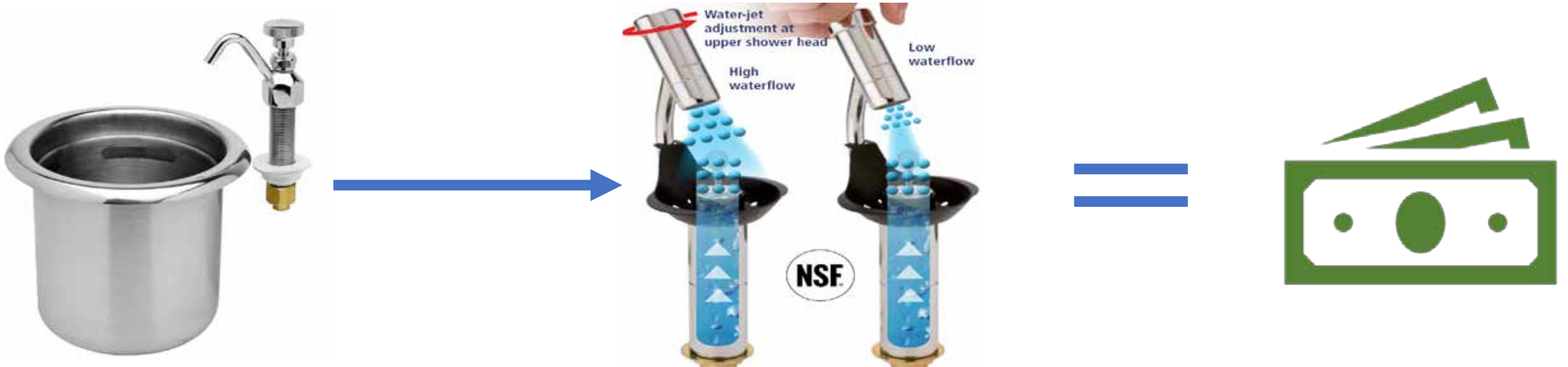
# Jamba Results

	Pre-Replacement	Post Replacement
Average Flow Rate (gpm)	0.25	0.3
Operating Time (hr)	12.5	0.5
Daily Water Use (gal)	167	9.6
<b>Reduction in Water use</b>		<b>94%</b>

# Cost Savings

If all 3 Dipper Wells were Replaced

- Total water use: 10,450 gal/y
- Total cost: \$182/y
- Savings: 170,000 gal, \$2,980 per year
- ROI: Less than 1 year



# Black Bear Los Banos Scoop Shower Savings



- Baseline Dipper Well used 486.5 gal/day
- Scoop Shower replacement used 4.9 gal/day

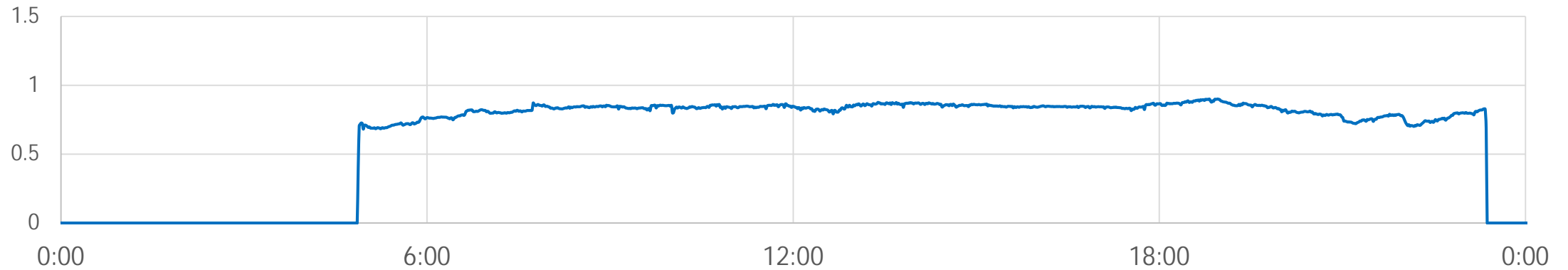


# Black Bear Los Banos Results

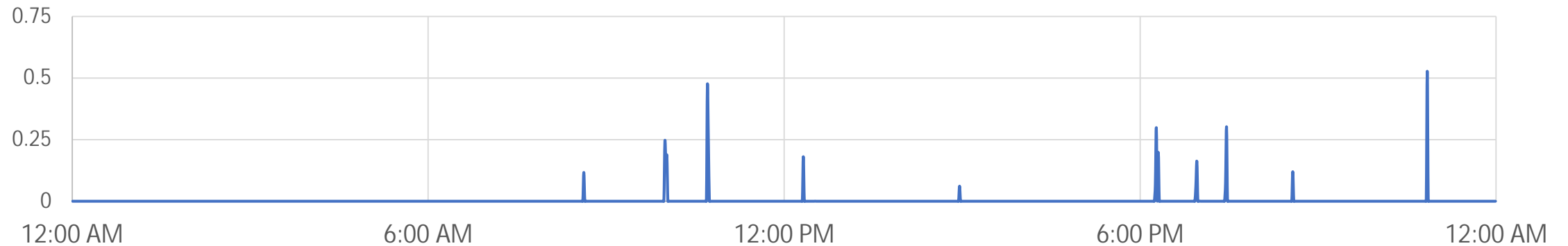
	Pre-Replacement	Post Replacement
Average Flow Rate (gpm)	0.6	0.3
Operating Time (hr)	12.5	minimal
Daily Water Use (gal)	486.5	4.9
<b>Reduction in Water use</b>		<b>99%</b>

# Continuous flow is extremely wasteful

Los Banos Dipper Well Flow Rate (gpm) 6/14

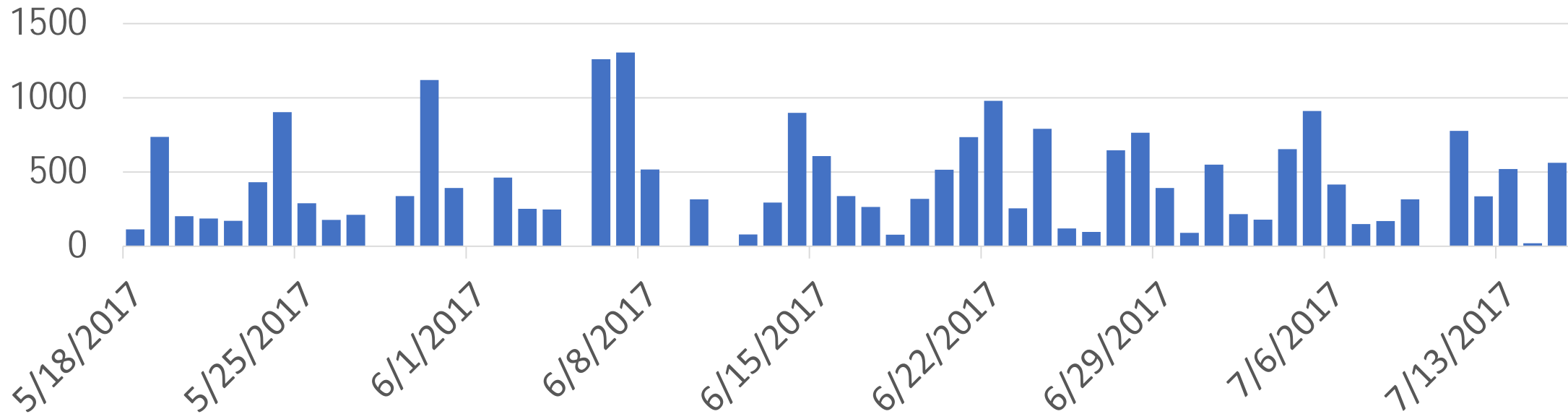


Los Banos Scoop Shower Flow Rates (gpm), 8/1



# Black Bear LB Operation

BBDLB Daily Water Use, 5/18 - 7/14 (gal/day)



Staff operating practices had massive impact on total use!!!



# Savings through Operation Standardization



- New Use per day = 5 gpm
  - Very little variation
  - Weekend use higher than weekday use
  - New water use pattern matches service demand!
- Single well changeout saved 175,000 gallons per year

# BB Madera Savings – both water and energy

## Hot-Water Fed Dipper Well

- Left on overnight
- Low flow rate

## Replaced with ConserveWell:

- Manual dump/fill
- Staff replaced water every 4h
- Left on overnight



# Black Bear Madera Results

	Pre-Replacement	Post Replacement
Average Flow Rate (gpm)	0.25	N/A
Operating Time (hr)	24	24
Daily Water Use (gal)	321	4
Daily Energy Use (therm)	2	0.1
<b>Reduction in Water use</b>		<b>97%</b>
<b>Reduction in Energy use</b>		<b>95%</b>



# Point of energy use and fuel type changed

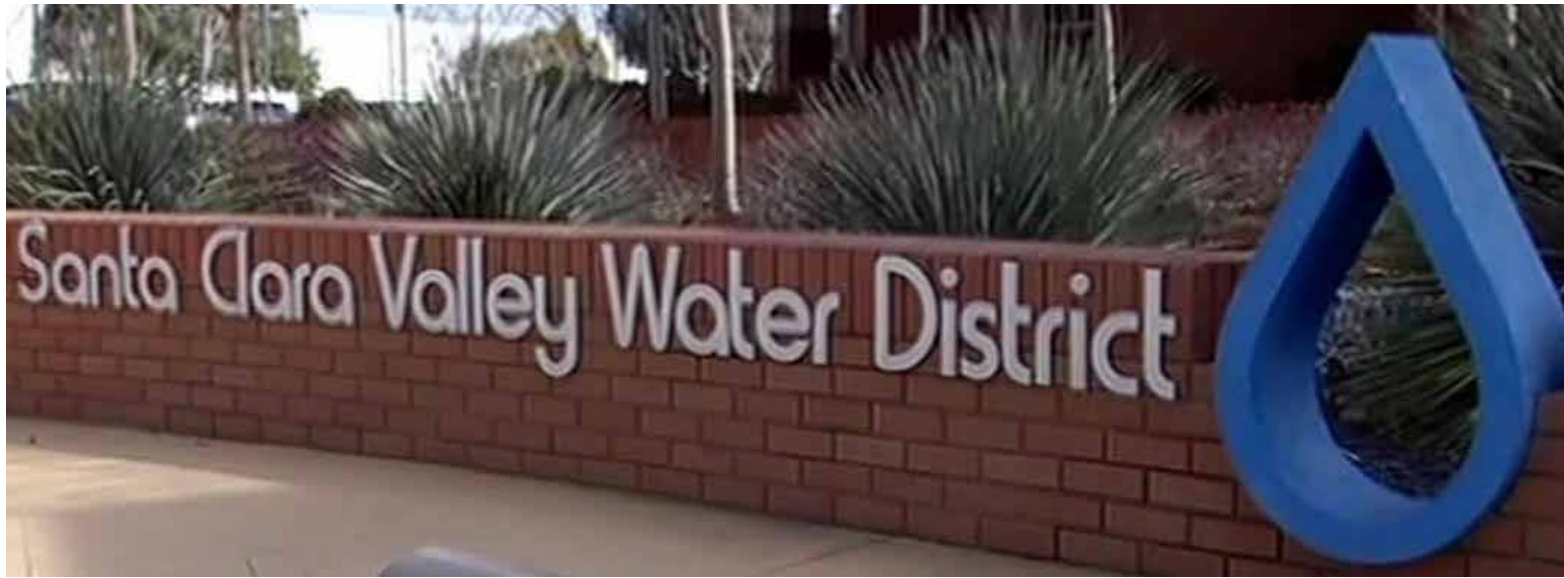


# Additional Technology to be Researched



- Nemco RinseWell
- Recirculates water
- Disinfects water with Ozone
- Microbe study available

# Future Field Studies necessary (and underway!)



# Next Steps

- Field Evaluate Nemco RinseWell
- Field Studies at different site types
- Work with health departments to develop SOPs
- Develop utility incentives

*Thanks!*



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