

# More Crop Per Drop

Delivering Efficiency and Service – Benefits of the South San Joaquin Irrigation District's Pilot Pressure Irrigation Project

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February 6, 2014





# Project Location

# Project Information

- Pressure system to replace gravity based delivery network
- **Cost:** 13 million USD (Received 1 million dollar grant from Bureau of Reclamation and Natural Resources Conservation Service)
- Funding from farmer irrigation charges and SSJID electricity sales
- **Service Area:** 3,800 acres in Ripon, CA
- **Pumping Capacity:** 23,500 GPM
- **Customer Supply Pressure:** Up to 70 psi
- **Customer Connections:** 76 turnouts spread across service area powered by 55 field telemetry units that utilize solar to power magnetic flow meters, flow control valves, orchard moisture sensors, pressure transmitters, and radio communications

# Project Goals & Benefits

**Goal 1: Provide the highest level of service to the customers of SSJID:** The farmers of SSJID's Division 9 are able to get water for the first time exactly when they need it at the desired pressure. Valves are automatic and the interface is web based allowing farmers to concentrate on their farming operation.

**Goal 2: Improve beneficial use of water:** With a pressure system available, farmers can reduce flood irrigation and utilize drip, micro, and solid state sprinklers to irrigate their orchards which improves crop yield, and conserves water by up to 50%.

**Goal 3: Comply with volume billing requirements:** Customers of this system comply with State regulations via a magnetic flow meter accurate to 0.5% at each customer connection.

**Goal 4: Reduce groundwater pumping:** Groundwater pumping has become commonplace due to unavailability of gravity water. New surface water supplied pressure systems have a considerable reduction in pumping of salinity stricken groundwater. The trees in Division 9 are already benefiting.

**Goal 5: Improve air quality:** With less groundwater pumping, air quality though out Division 9 has improved due to the reduced use of diesel powered well pumps.

**Goal 6: Reduce irrigation costs to farmer:** The customer is charged 30 dollars/acre-ft for irrigation water. Many farmers are realizing a 50+% cost savings vs. running well pumps.

# Project Overview

File Special

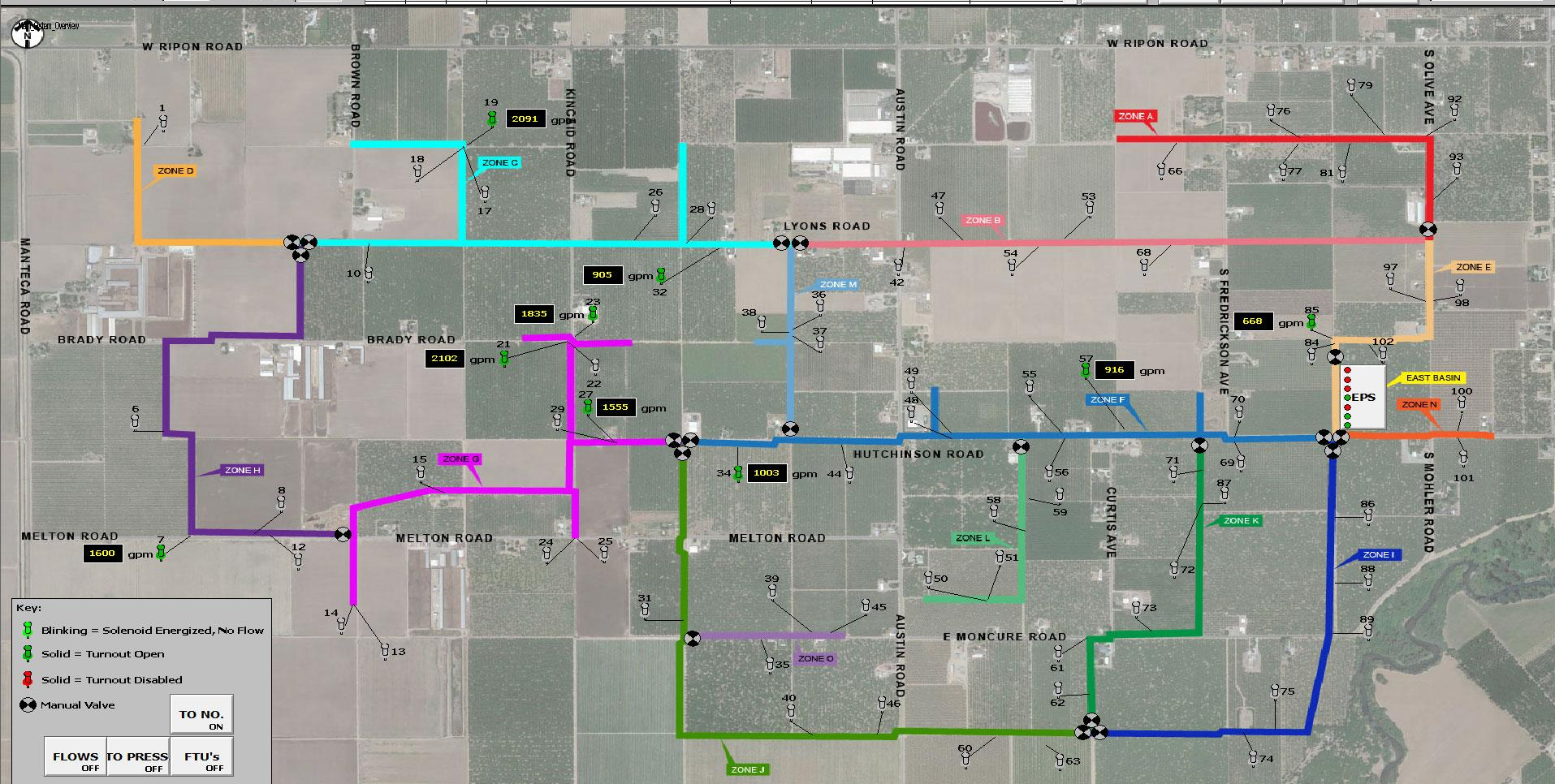
Development



System Dashboard	
Total Flow	12508 gpm
East Basin Volume	20 a/f
Pump Stage	12
Header Pressure	60.7 psi
Pressure Setpoint	60 psi
East Basin Level	4.53 ft

Date	Time	Priority	Name	Group	Value	Operator
29 Jun	16:57	2	U_Outlet_Vlv_Pstn_XDCR	EPS	ON	FOSTER/JG-LT1/None
29 Jun	16:57	2	Turnout_86_TO_Moisture	Turnout_86	ON	FOSTER/JG-LT1/None
29 Jun	16:57	2	FTU_3_Percent_Good_READS	FTU_3	0	FOSTER/JG-LT1/None
29 Jun	16:57	2	FTU_31_Percent_Good_READS	FTU_31	0	FOSTER/JG-LT1/None

<b>ACK ALL</b>	Enter Turnout #	0	None
<b>SUMMARY</b>	<b>MAIN</b>	<b>AF Query</b>	<b>AF Trend</b>
<b>HISTORY</b>	<b>ORDERS</b>	<b>EAST PS</b>	<b>DIST.</b>
<b>Login</b>	6/29/2012		<b>Logoff</b>
		16:57:39	





AWWA Class Pipeline Components



Division 9 Irrigation Enhancement Project



## Field Telemetry Unit and Turnout Assembly

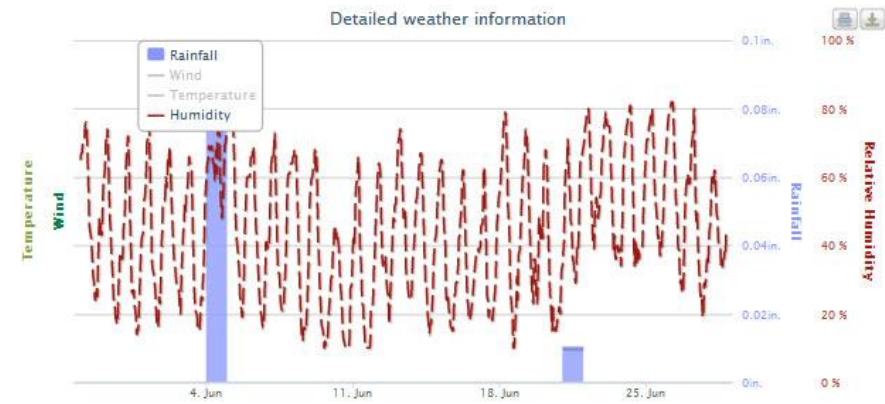
Division 9 Irrigation Enhancement Project

<b>Thursday</b> 57.0° F - 90.0° F, Clear, WNW at 12.0	<b>Thursday Night</b> 57.0° F - 88.0° F, Clear, WNW at 11.0	<b>Friday</b> 59.0° F - 86.0° F, Clear, WNW at 13.0	<b>Friday Night</b> 57.0° F - 91.0° F, Clear, WNW at 9.0	<b>Saturday</b> 61.0° F - 100.0° F, Clear, WNW at 8.0	<b>Saturday Night</b> 59.0° F - 95.0° F, Clear, West at 8.0
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NO CURRENT ALERTS			
Significance:	NA	Phenomena:	NA
Time Issued:	1900-01-01 00:00:00.000	Time Expires:	1900-01-01 00:00:00.000
There are currently no national weather alerts.			

ASTRONOMY			
	Sunrise:	2012-06-28 05:45:00.000	
	Sunset:	2012-06-28 20:30:00.000	
	Moon Age:	9	Moon Illuminated:
			63.0%

DETAILED WEATHER REPORT			
Observation Location:	Woodward Park, Manteca, California		
Last Updated:	2012-06-28 20:15:13.000		
	Weather:	Clear	Temp: 76.1 F
	Humidity:	46%	
	Wind:	0	Windchill: 0.0
	Wind Direction:	NW	Wind Gust: 14 Mph
	Wind Degrees:	310.0°	
	Wind Speed:	14 Mph	
	Heat Index:	0.0 F	
	Solar Radiation:	0.0 UV	
	Rain Today:	0.0 In	
	Dewpoint:	54.0 F	
	Visibility:	10.0 Miles	
	Pressure In:	29.98	
	Pressure Trend:	0	



## Farmer Weather Information

## Division 9 Irrigation Enhancement Project



Turnout 19 - raymus Weather Historical Information Administration Help

<b>Thursday</b> 57.0° F - 90.0° F, Clear, WNW at 12.0	<b>Thursday Night</b> 57.0° F - 88.0° F, Clear, WNW at 11.0	<b>Friday</b> 59.0° F - 86.0° F, Clear, WNW at 13.0	<b>Friday Night</b> 57.0° F - 91.0° F, Clear, WNW at 9.0	<b>Saturday</b> 61.0° F - 100.0° F, Clear, WNW at 8.0	<b>Saturday Night</b> 59.0° F - 95.0° F, Clear, West at 8.0
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**REQUEST WATER.**

Request Date:

Request water for  hours/minutes

\* Water deliveries must be placed 48 hours before delivery.

**TURNOUT 19 OVERVIEW**

Turnout: <u>19</u>	Nickname: <u>raymus</u>	APN: 257-230-08
Owner	Van Till	
Acres	76	
Crop	almonds	

**AVAILABLE TIMES FOR 06/30/2012**

12:00 am	N/A	1:00 am	N/A	2:00 am	N/A	3:00 am	N/A	4:00 am	N/A	5:00 am	N/A	6:00 am	N/A	7:00 am	<input type="radio"/>	8:00 am	<input type="radio"/>	9:00 am	<input type="radio"/>	10:00 am	<input type="radio"/>	11:00 am	<input type="radio"/>
12:00 pm	<input type="radio"/>	1:00 pm	<input type="radio"/>	2:00 pm	<input type="radio"/>	3:00 pm	<input type="radio"/>	4:00 pm	<input type="radio"/>	5:00 pm	<input type="radio"/>	6:00 pm	<input type="radio"/>	7:00 pm	<input type="radio"/>	8:00 pm	<input type="radio"/>	9:00 pm	<input type="radio"/>	10:00 pm	<input type="radio"/>	11:00 pm	<input type="radio"/>

**AVAILABLE TIMES FOR 07/01/2012 (1 DAY AFTER)**

12:00 am	<input type="radio"/>	1:00 am	<input type="radio"/>	2:00 am	<input type="radio"/>	3:00 am	<input type="radio"/>	4:00 am	<input type="radio"/>	5:00 am	<input type="radio"/>	6:00 am	<input type="radio"/>	7:00 am	<input type="radio"/>	8:00 am	<input type="radio"/>	9:00 am	<input type="radio"/>	10:00 am	<input type="radio"/>	11:00 am	<input type="radio"/>
12:00 pm	<input type="radio"/>	1:00 pm	<input type="radio"/>	2:00 pm	<input type="radio"/>	3:00 pm	<input type="radio"/>	4:00 pm	<input type="radio"/>	5:00 pm	<input type="radio"/>	6:00 pm	<input type="radio"/>	7:00 pm	<input type="radio"/>	8:00 pm	<input type="radio"/>	9:00 pm	<input type="radio"/>	10:00 pm	<input type="radio"/>	11:00 pm	<input type="radio"/>

**AVAILABLE TIMES FOR 07/02/2012 (2 DAYS AFTER)**

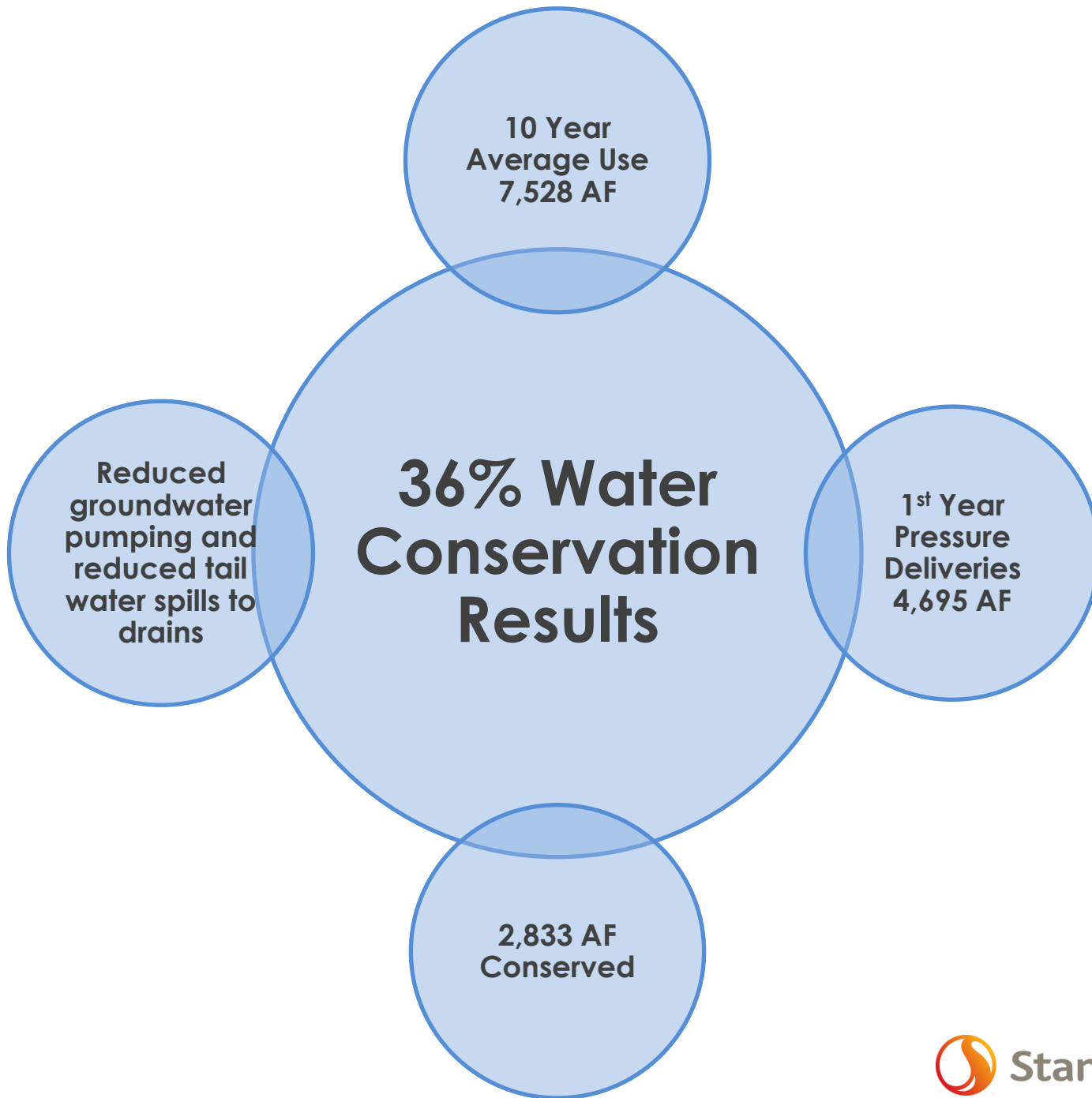
12:00 am	N/A	1:00 am	N/A	2:00 am	N/A	3:00 am	N/A	4:00 am	N/A	5:00 am	N/A	6:00 am	N/A	7:00 am	N/A	8:00 am	N/A	9:00 am	N/A	10:00 am	N/A	11:00 am	N/A
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**AVAILABLE TIMES FOR 07/03/2012 (3 DAYS AFTER)**

12:00 am	N/A	1:00 am	N/A	2:00 am	N/A	3:00 am	N/A	4:00 am	N/A	5:00 am	N/A	6:00 am	<input type="radio"/>	7:00 am	<input type="radio"/>	8:00 am	<input type="radio"/>	9:00 am	<input type="radio"/>	10:00 am	<input type="radio"/>	11:00 am	<input type="radio"/>
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## Farmer Irrigation Scheduler Interface

## Division 9 Irrigation Enhancement Project

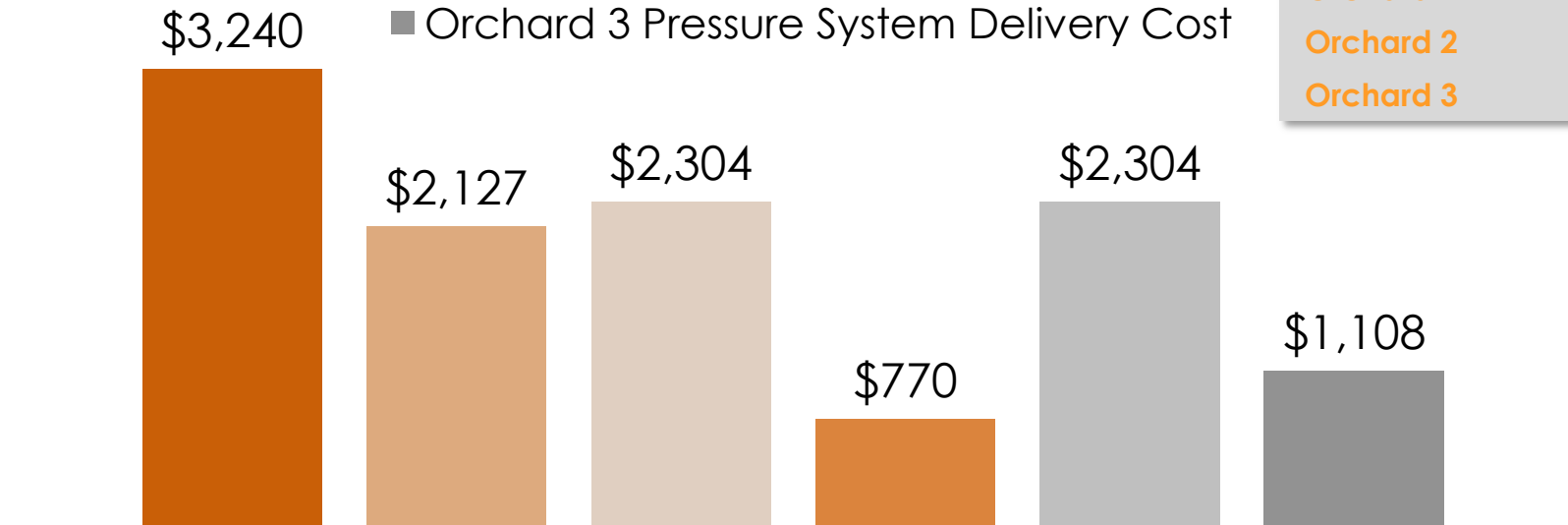


# Reduction In Farmer Energy Costs

## 2012 Division 9 Peak Season Case Study

- Orchard 1 Diesel Pump Fuel Cost
- Orchard 1 Pressure System Delivery Cost
- Orchard 2 Diesel Pump Fuel Cost
- Orchard 2 Pressure System Delivery Cost
- Orchard 3 Diesel Pump Fuel Cost
- Orchard 3 Pressure System Delivery Cost

	Farmer Savings (%)
Orchard 1	34%
Orchard 2	67%
Orchard 3	52%



# Improved Yields

- Pressure Customer 2013 Yield: 6,900 lbs/acre = 30% increase in yield



# Questions?

