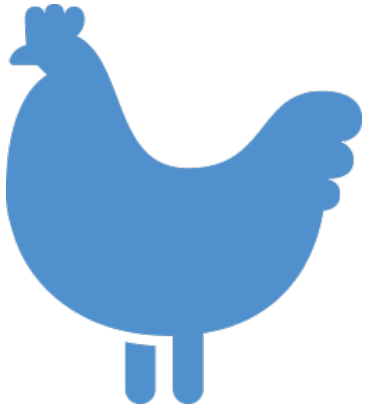
Agriculture Sector Update – Tom Osborn

Agricultural Sector

Growing Opportunities in Ag

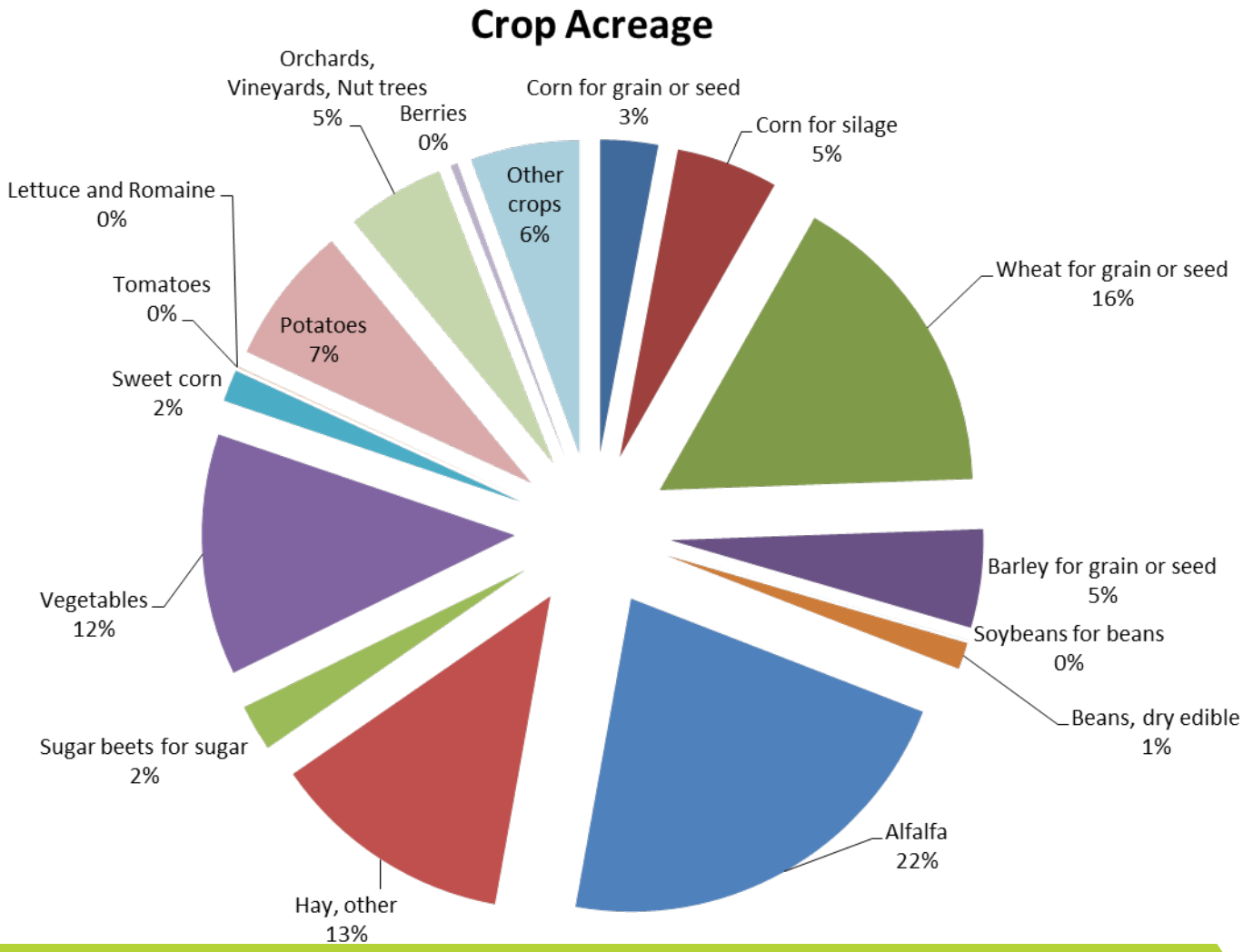
Refresh on the PNW data and trends
BPA EE measures available
Ag Market Research highlights
LEPA/LESA measure
SIS Baseline Research update
VFD data to RTF
Data driven Ag



Summary USDA Data

In PNW:
6.8 million irrigated acres
5.7 million acres in farms over 200 acres
3.2 million acres is pivots and linear moves (eg 32,000 pivots)
2 million acres have pivot pressures over 30 psi
18,600 well Pumps avg lift 108 feet
Primary crops are wheat, alfalfa, hay, corn, potatoes, vegetables
Commodity prices are down (up to 30% drop)

USDA Data


Crop Acreage
Orchards, Vineyards, Nut trees 5%
Berries 0%
Corn for grain or seed 3%
Corn for silage 5%
Other crops 6%
Lettuce and Romaine 0%
Tomatoes 0%
Potatoes 7%
Sweet corn 2%
Wheat for grain or seed 16%
Barley for grain or seed 5%
Soybeans for beans 0%
Beans, dry edible 1%
Vegetables 12%
Sugar beets for sugar 2%
Alfalfa 22%
Hay, other 13%

New Jersey Aero Farms steel mill

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Current Ag Measures Include

- Scientific Irrigation Scheduling
- Sprinkler system hardware (including LEPA/LESA)
- VFDs for Ag Turbine Pumps
- Transformer De-energization – seasonal (deemed calc)
- Irrigation System and Pump Testing
- Non electric stock water tanks
- Lighting upgrades (shops, dairies, lots) (deemed calculator)
- Compressed air systems (deemed calculator)
- Custom Projects (i.e. gravity feed, new pumps/motors, mainline, redesign, diary chillers, etc)

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Ag Market Research

BPA hired Navigant to interview utilities and trade allies to help gain a better understanding of the Ag Sector. This report (draft in Sept) will help BPA shape any future program changes. Initial findings:

Focus on entire irrigation system (verses hardware and VFDs)

Enhance trade ally networking (75% of sales go thru 10 dealers) Spiffs?

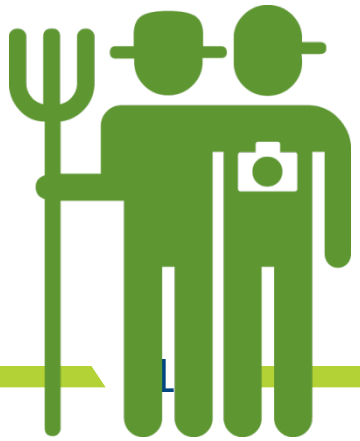
Consider approach that promotes the use of all data for intelligent watering

Further develop LEPA LESA program

Increase focus on Pumps and VFD program

Cannot generate momentum savings estimate (only 2 manuf)

SEM for larger operations



LESA Study Funded by BPA, with WSU and University of Idaho as Cooperators

Leads: Troy Peters, P.E., Ph.D., WSU

Howard Neibling, P.E., Ph.D., U of I

10 fields, one span, 2014 and 2015

Past: High Pressure Impacts

- Irrigation Efficiency ~60%
- Operating Pressure 40-80 psi.
- Outlet Spacing ~20-30 ft.
- Application rate: Medium

Present: Mid Elevation Spray Application (MESA)

- Irrigation Efficiency ~85%
- Operating Pressure: ~40 psi.
- Outlet Spacing: ~10ft
- Application Rate: High

Future? Low Elevation Spray Application (LEPA/LESA/LPIC)

- Irrigation Efficiency ~97%
- Operating Pressure: ~15psi.
- Outlet Spacing: <3-5ft
- Application rate: Very High

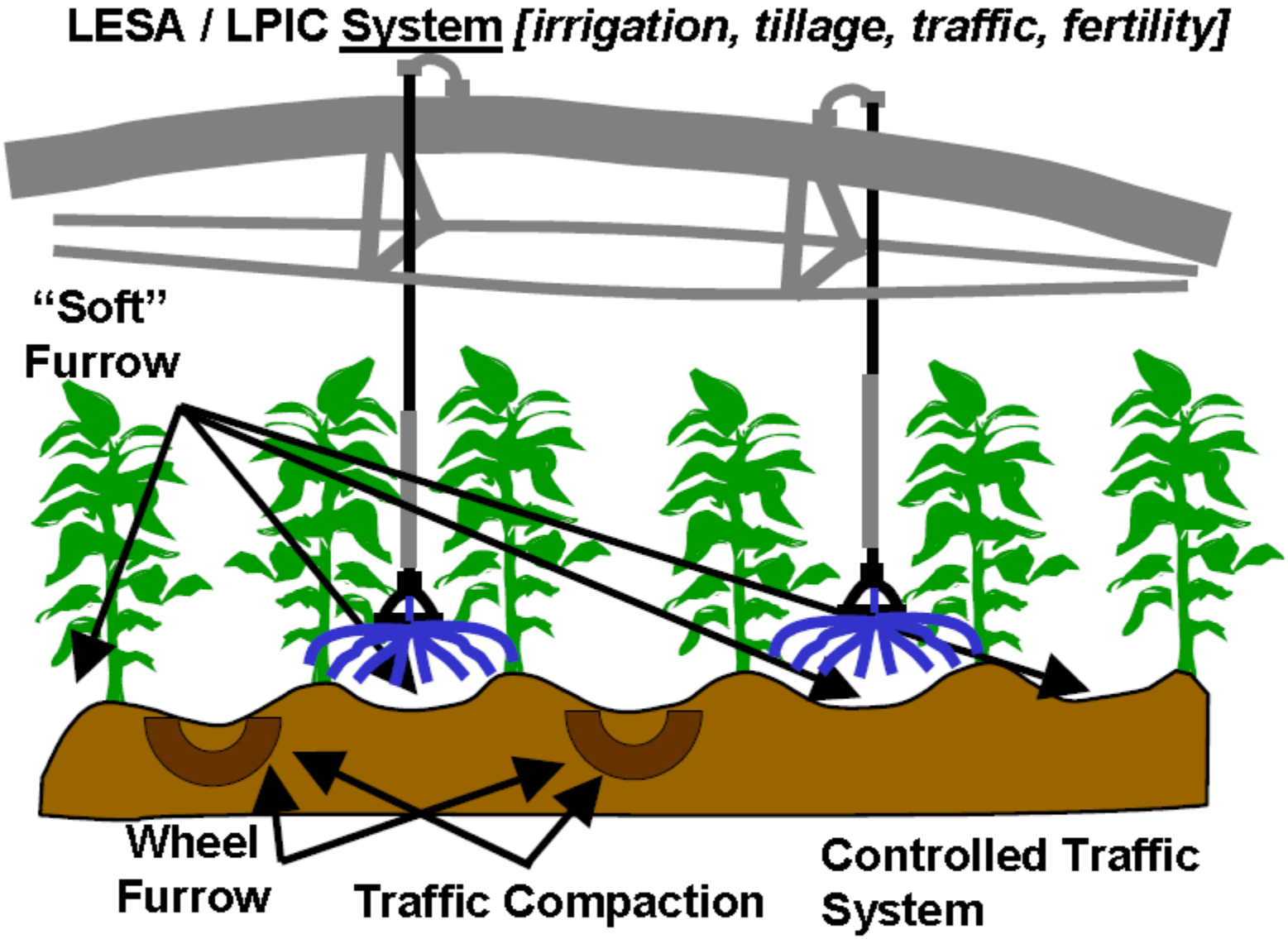
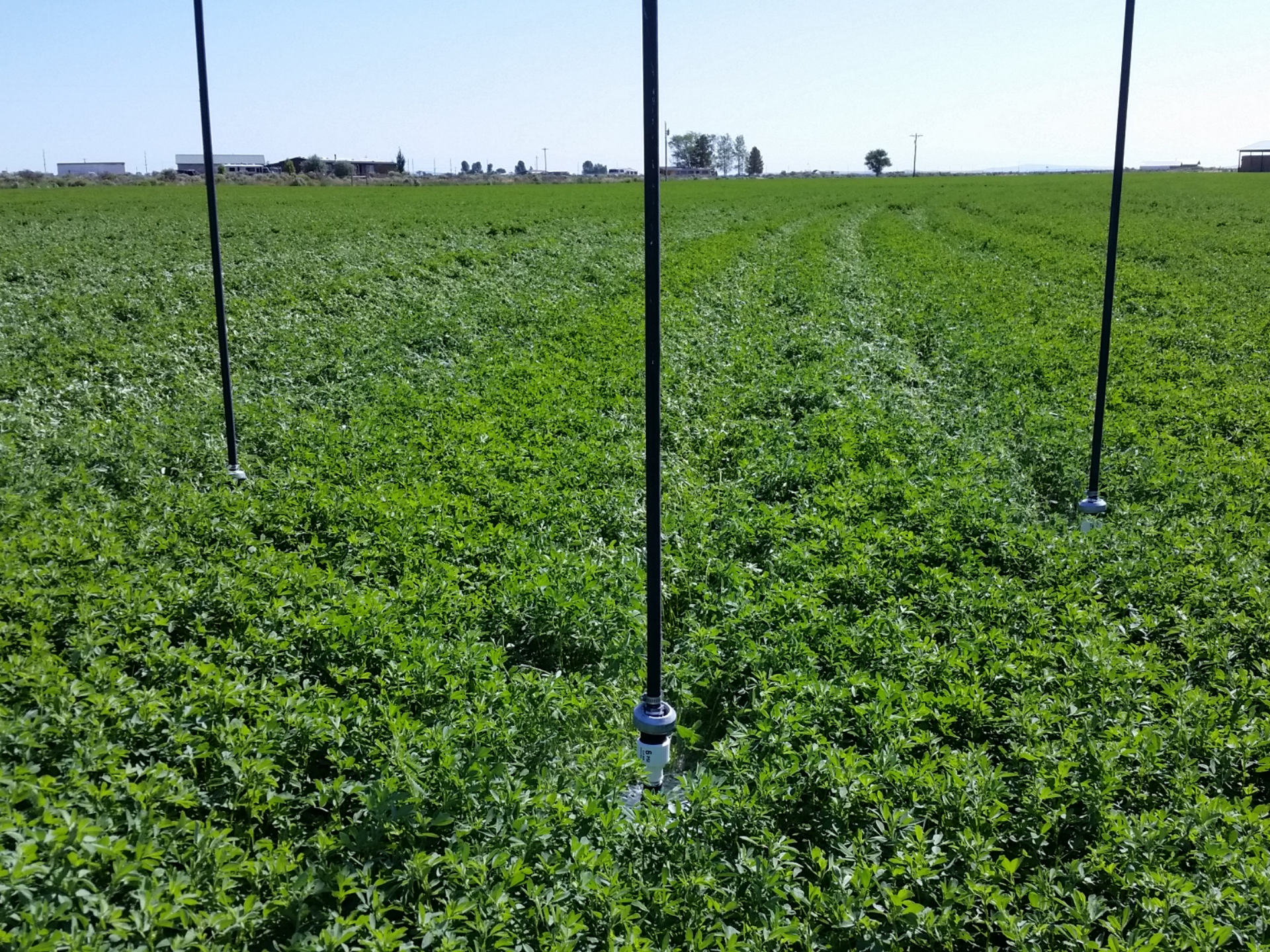


Figure 4. Illustration of the "agronomic system" concept involving irrigation, controlled tillage, fertility, etc.

Small nozzles. Requires cleaner water.



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LEPA LESA Effective April 1, 2016

Change: Added an incentive to fill out the LEPA or LESA project information form

Rationale: LESA is gaining some traction in the PNW, especially Idaho. This measure was added so that BPA and the RTF can collect field specific data on LEPA or LESA conversions.

Takes about ½ hour to fill out. Trade allies can fill this out.

Hope to get 40 in 2016 and 50-75 in 2017

Take results to RTF in Jan / Feb 2018

LEPA / LESA Conversion

Project Information Form for BPA Qualified Measure (For Irrigation Efficiency Projects)

Instructions: To be eligible for this reimbursement, complete this form for *each* center pivot/lateral move irrigation system *converted* to Low Energy Precision Agriculture (LEPA) or Low Elevation Sprinkler Application (LESA). Complete this form with the best information you have, and submit it to your serving utility.

A. FARM AND SITE INFORMATION

SERVING UTILITY:

Farm Name:	City / State:	
Address:	Zip:	
Farm location address (if different from above):		
Meter or Account number of primary pumping plant:		
Estimated flow of pivot *before* conversion (gpm):	Estimated pivot run time (hrs/yr):	
Design flow of pivot *after* conversion to LEPA or LESA (gpm):	LEPA?	LESA?
What is primary pumping plant lift (feet) from water source (eg from well or canal water surface)?		
What is elevation at primary pumping plant (feet)?		
What is elevation of converted pivot (list ID number and elevation of pivot point)?		
What is the pivot pressure at the pivot point?		

B. IRRIGATION SYSTEM INFORMATION

Total irrigation system size (acres) served by irrigation pumping plant				
Number of acres under the pivot or lateral move irrigation system converted to LEPA/LESA				
Predominant Soil Type (description)		Terrain Type (description)		
	2013	2014	2015	2016
Crop type under the converted pivot				

C. ANNUAL ENERGY USAGE INFORMATION

Utility can complete this section.

	2013	2014	2015	2016*
Primary pumping plant (kWh)				
Booster pumps (kWh)				

*The 2016 data will be entered after completion of the 2016 irrigation season.

D. FINAL INFORMATION

Total Installed Cost of the conversion (before incentive) includes equipment, labor and tax $			
Did you receive any incentives? ☐ No ☐ Yes			
If yes, from whom? ☐ NRCS ☐ Serving Utility ☐ Other,			

By signing this form, I confirm that the above information is correct to the best of my knowledge.

Representative Signature	Print Name Phone # ( )- -	Date / /

THANK YOU FOR FILLING OUT THIS FORM!

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Scientific Irrigation Scheduling

SIS is an important part of resource portfolio. (current enrollment of 135K acres, 3aMW, 5 million acres of sprinkler irrigated land in PNW)

Current savings are based on 10% water savings

RTF reviewed all Unit Energy Savings measures, SIS not compliant

Utilities interested in continuation of the measure

Research is centered on Mid Columbia, 400 fields

Compare applied water to fields with and without SIS, and market avg

The delta is the water savings, calculate energy savings.

BPA report draft findings Utilities/stakeholders in Nov, and to RTF in Feb 2017

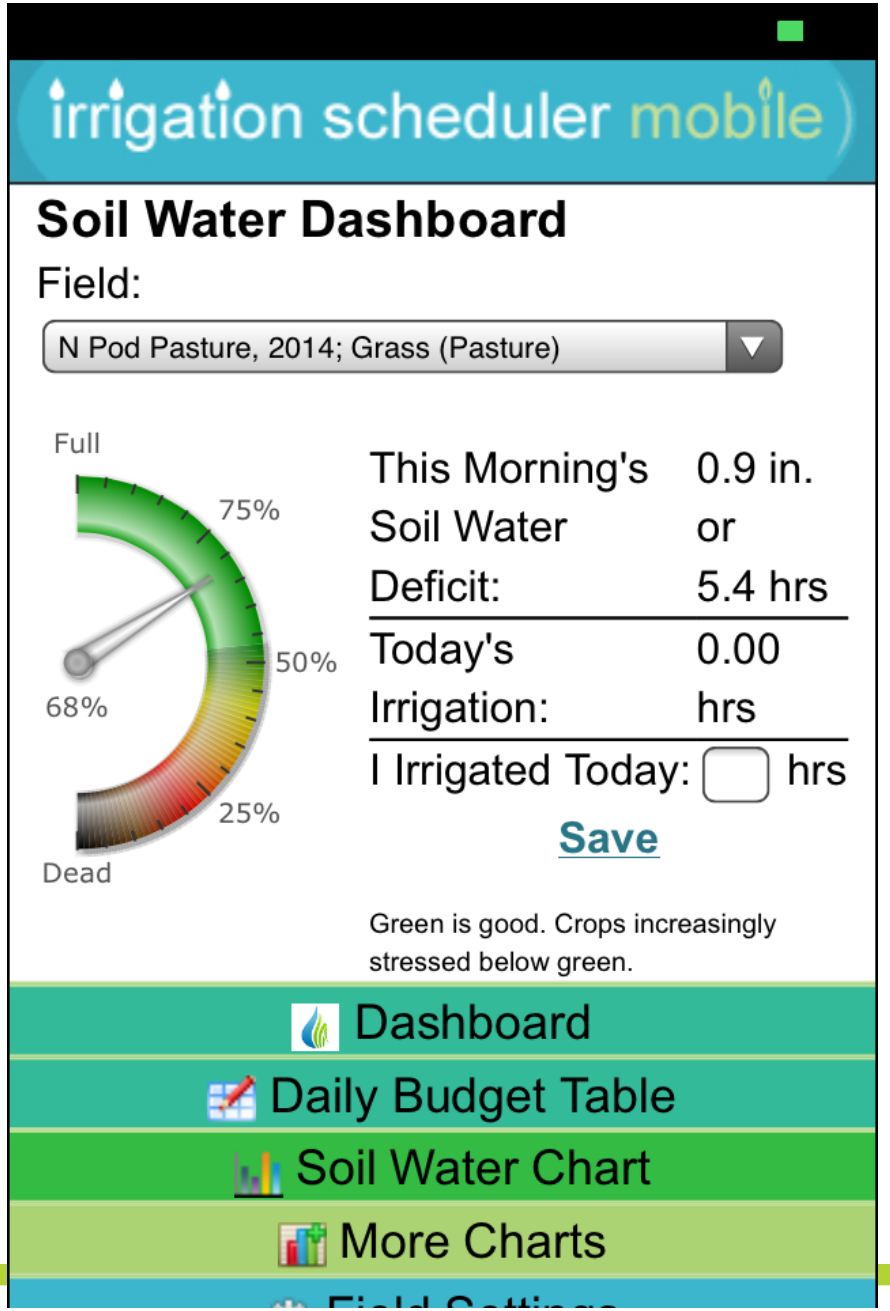
Documents on study are posted on Conduit

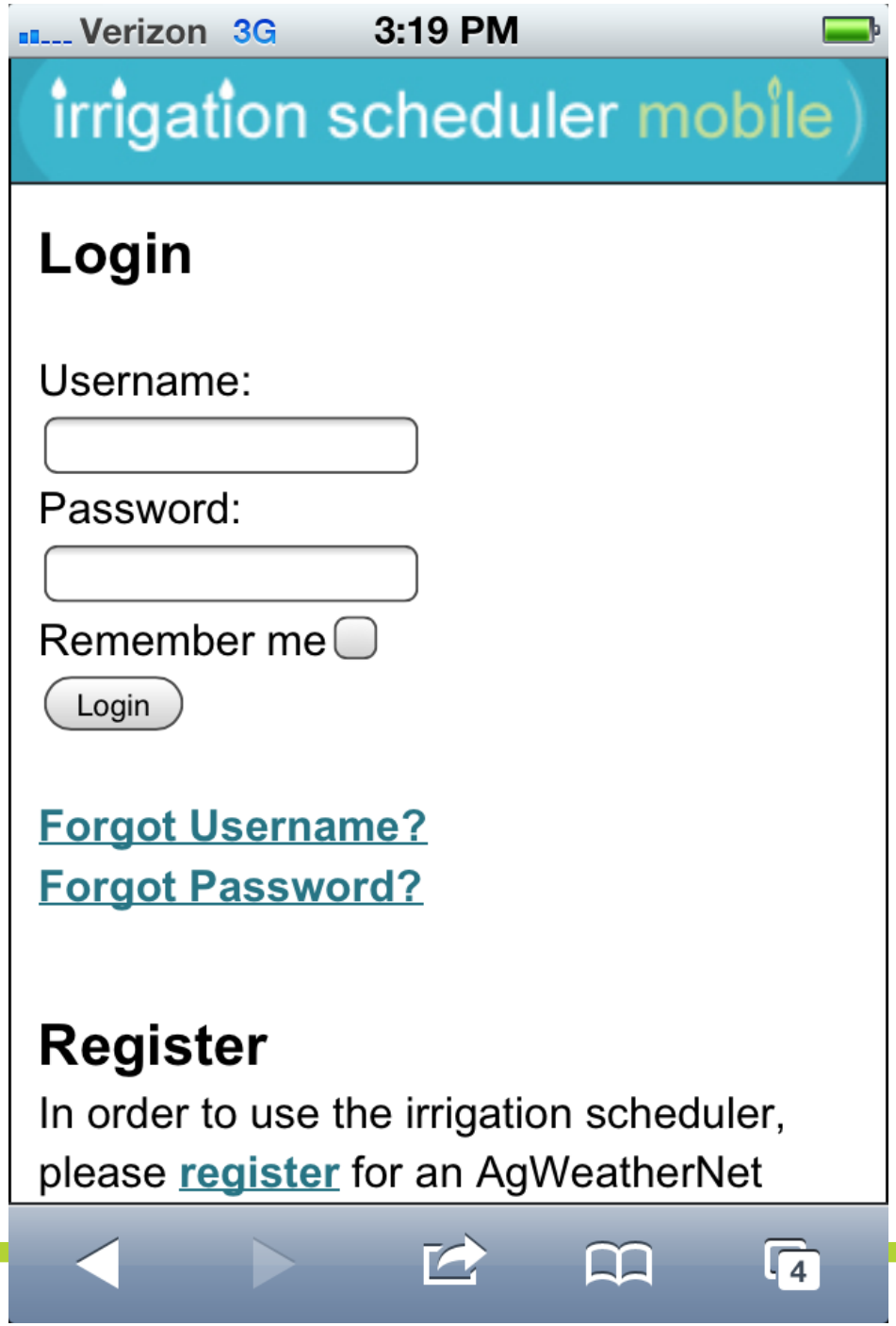
WSU has developed an Irrigation Scheduling app.

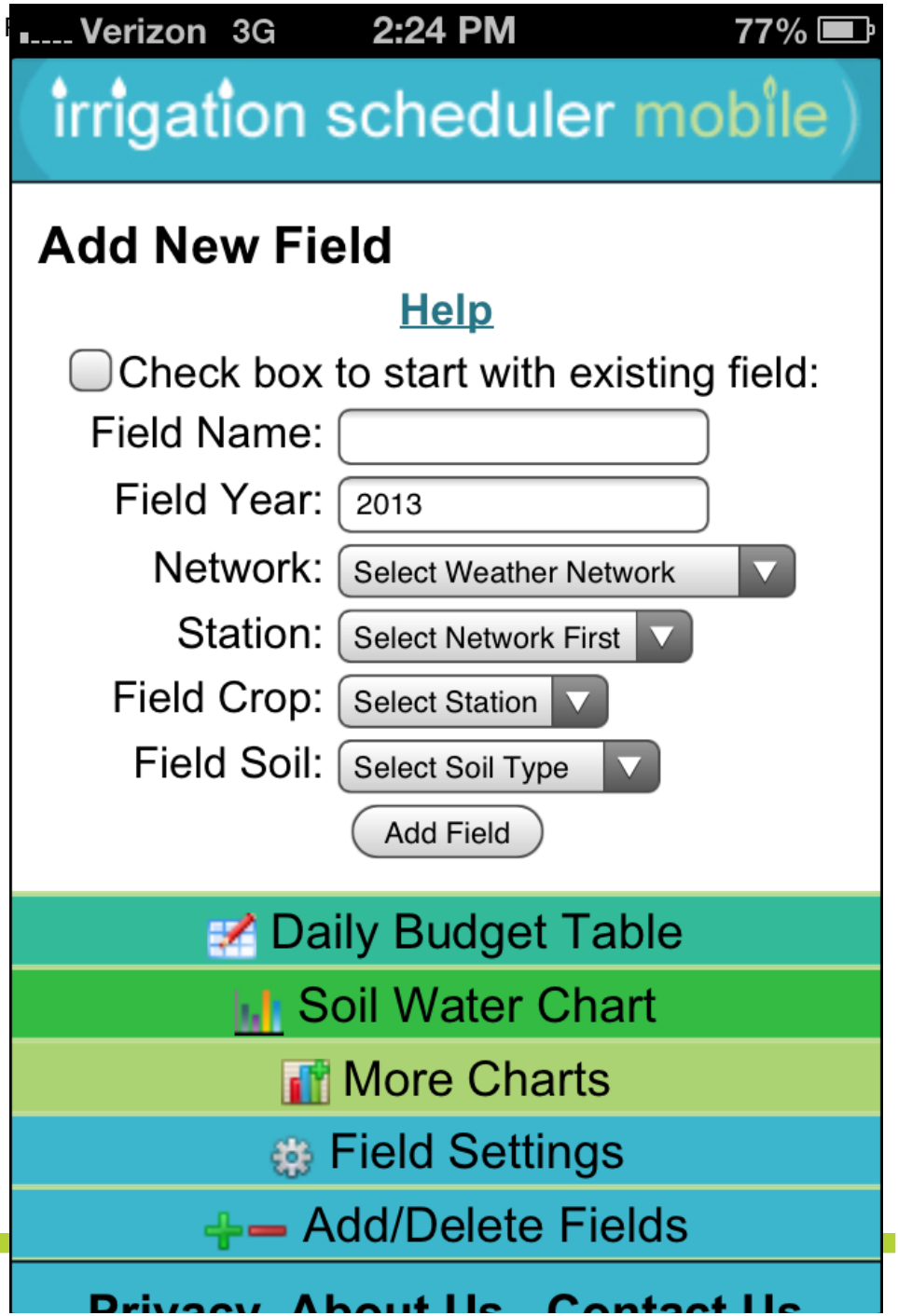
You can go to the

Google Apps Store to download it.

WSU Irrigation Scheduling Mobile




Verizon 3G 3:19 PM
irrigation scheduler mobile
Login
Username:
Password:
Remember me
Login
Forgot Username?
Forgot Password?
Register
In order to use the irrigation scheduler, please register for an AgWeatherNet


Verizon 3G 2:24 PM 77%
irrigation scheduler mobile
Add New Field
Help
Check box to start with existing field:
Field Name:
Field Year: 2013
Network: Select Weather Network
Station: Select Network First
Field Crop: Select Station
Field Soil: Select Soil Type
Add Field
Daily Budget Table
Soil Water Chart
More Charts
Field Settings
Add/Delete Fields

Verizon 3G 11:13 AM 100%

irrigation scheduler mobile

7-Day Daily Budget Table

Field: Potatoes, 2011; Potatoes

Help

Date	Water Use (in)	Rain& Irrig. (in)	Available Water (%)	Water Deficit (in)	Edit Data
07/12	0.22	0	80.9	0.88	Edit
07/13	0.25	0	75.5	1.13	Edit
07/14	0.22	0	70.7	1.35	Edit
07/15	0.24	0	65.4	1.59	Edit
07/16	0.23	0	60.4	1.82	Edit
07/17	0.22	1	77.5	1.04	Edit
07/18	0.2	0	73.1	1.24	Edit

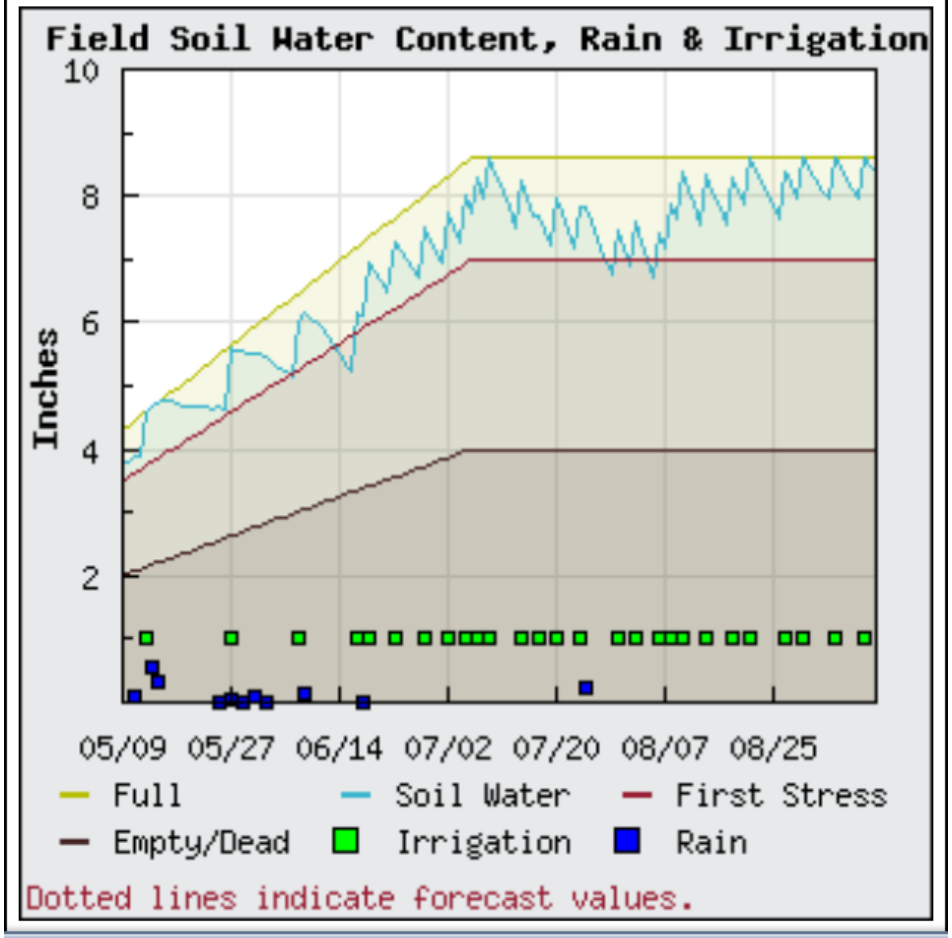
|<< <<< Jul 12, 2011 >>> >>|

Verizon 3G 4:30 PM 88%

irrigation scheduler mobile

Field: Potatoes, 2011; Potatoes

Help



Technology Driven Ag

Drones, smart phone apps, Weather data integration, systems optimization, Purchasers, GPS, communication, DR

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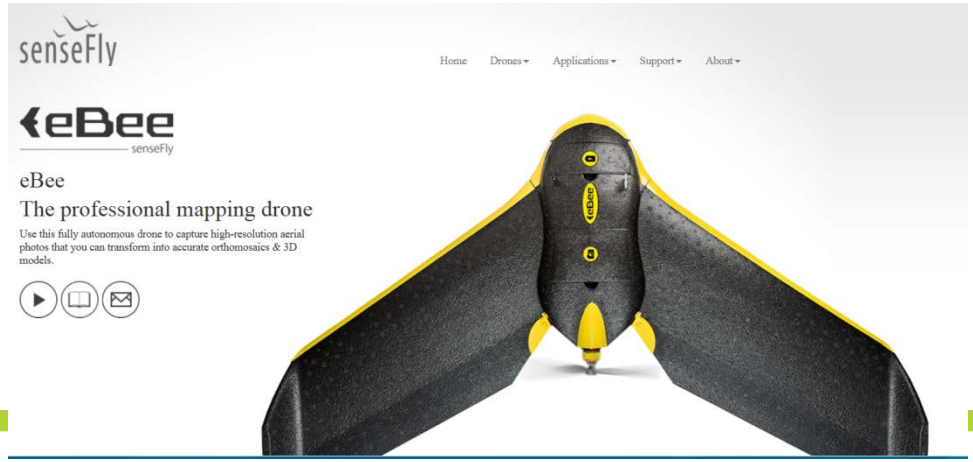
Technology Data Driven Ag

Consumer and purchasers demanding higher quality produce, lower cost, less pesticides, etc. (LW, Simplot, AB, Coors Miller, PepsiCo, WalMart, etc)

Not just SIS….irrigation system control on your smart phone, tractors on GPS, Drones collecting data, cloud processing, integration and targeting specific plants, VRI, Demand Response, etc.

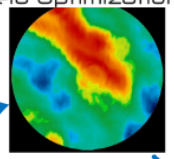


Precision Irrigation

Supply Chain Partners & Sustainability

Regulations & Reports

CropMetrics™
Yield Optimization Technology



Soil and Field Properties

Crop Plan

Observations & Measurements

Grower

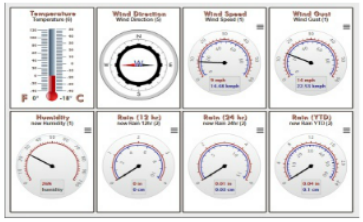
AGSENSE

Pivot Controller, Pivot & Sprinklers

Irrigation Record

Irrigation Prescription

Irrigation Plan



Real Time Weather Info

Agronomist

UA UNITED AG
Precision Agronomy Solutions

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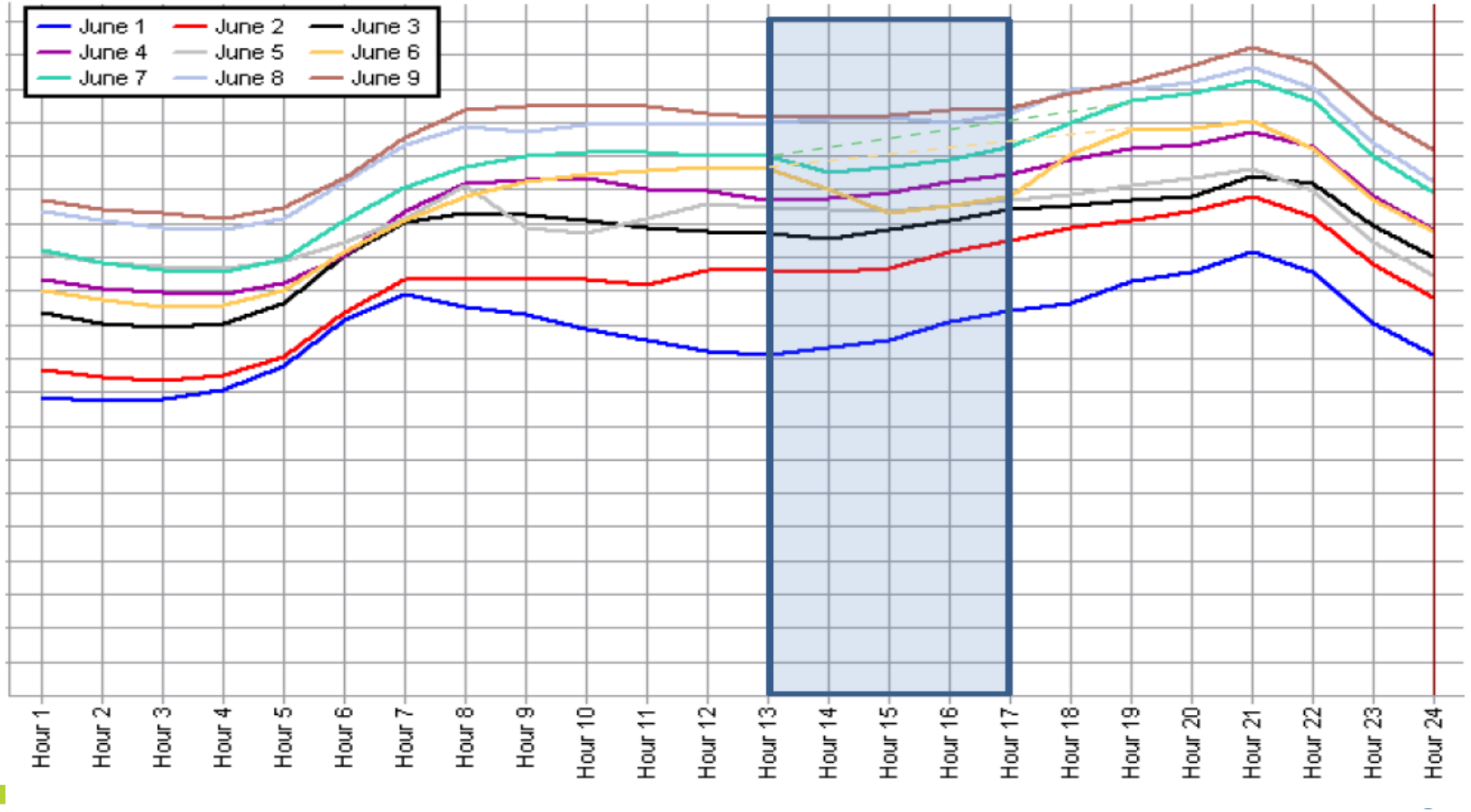
Agricultural DR Pilot



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VFD Deemed Measure update

BPA qualified measure

Up for RTF review to become proven

Only have 70 VFD projects in the IS 2.0 system

Need over 200 installations with 3 year pre and one year post

Outreach to IPCO, ETO, Avista, Rocky Mountain Power, etc

Agriculture Program Specialist

The BPA team hired 3 part time contracted programmatic support staff.

Spokane – Allison Christensen
North Central Oregon – Robert Wallace
South Idaho – Larry King

They are assigned to support specific utilities.

BPA technical staff to continue supporting other utilities.

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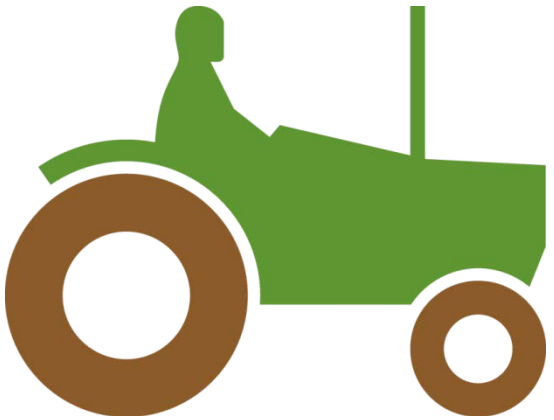
Program Marketing Toolkit

BPA hired contractor to help develop a toolkit with photos and language for marketing pieces.



bpa.gov/energy efficiency

Residential
Commercial
Industrial
Federal
Agriculture
- SIS
- Variable Frequency Drives
- Irrigation Pump Testing
- Irrigation Hardware Upgrades
- LEPA
- **Agricultural Marketing Toolkit**

Energy Efficiency
Agricultural Marketing Toolkit

To help utilities reach out to their agricultural customers, BPA has created a suite of marketing materials to promote agricultural energy efficiency upgrades.

Guided by customer input BPA has developed a number of materials including bill inserts, informational flyers, print and web advertisements, and HTML email templates. All materials can be customized to suit a variety of needs to market to end users.

These materials are being provided in their source format (Adobe InDesign) so that customers can customize these tools to fit their needs. Should you need assistance with this customization, please contact the BPA marketing department. The BPA Photo Library also contains images that can be used with BPA marketing materials or additional customer communications.

Scientific Irrigation Scheduling

Scientific Irrigation Scheduling

Copy Library
Informational Flyer
Print Advertising

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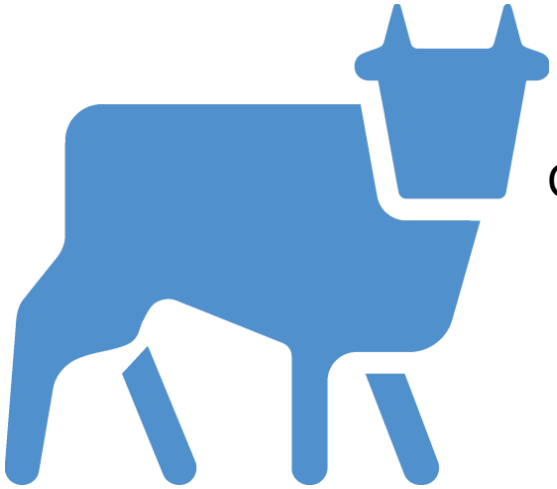
Summary

Agriculture important to the world!

Competition is driving ideas to lower costs, increase consumer demand.

EE is part of the solution

BPA willing to help you grow the market for Ag EE!



Contact your EER!