Modoc Point Modernization

Background:
- Initially developed by BIA
- Non-native leasing of grazing lands since the turn of the 19th century.
- MPID founding in 1954 at the termination of the treaty which ended the Modoc Point Project.
- 1864 water rights
On-Farm Analysis

MODOC POINT IRRIGATION DISTRICT
FLOOD IRRIGATION COMBINED EFFICIENCY (150' BORDER WIDTH)
GOALS AND OBJECTIVES

Modernization Goal: To increase water reliability to patrons throughout the irrigation season.

Key Modernization Objectives:

◦ Have reliable access to irrigation water throughout the entire irrigation season and access to stock water for up to 5,000 head of livestock.

◦ Provide pressurized water to patrons so that modernizing on-farm equipment is more feasible for water users.

◦ Develop a strategy for reducing return flows to the Upper Klamath Lake and utilizing recaptured water within the canal system.

◦ Reduce District operation and maintenance.

◦ Include micro-hydro and renewable energy sources if the system allows.

◦ Automate cleaning of the fish screens at the Williamson River pump station.
Irrigation Conveyances

MODOC POINT IRRIGATION DISTRICT
ALTERNATIVES

Legend
- ALT 1
- ALT 2
- ALT 3
- ALT 4
- ALT 5
- ALT 4 Proposed Pump
- ALT 5 Proposed Pump
- Existing Pump
- Existing Head Gate
- Drain
- Existing Ditch
- Irrigation District

1 in = 2.750 ft

FIGURE 5-1
Ground Mount Array – 3MW

In “sweet spot” of 2 to 5MW

3MW system cost ~$1/W (residential ~$3.40/W)

Approximately 8 year payback.

Pros:
• Proven application (400GW installed)
• Experienced install method and installers abound
• 1D tracking capable – 10% more energy production possible

Cons:
• Location impact – valuable farmland lost
• Heavy equipment, perimeter fencing, new roads, etc.
• Permitting issues: Archeology/cultural/enviromental impact study required, public perception
• Grounds keeping/weeding can damage modules (sheep don’t do damage!)
Floatovoltaics – Solar on water

The world’s first large-scale floatovoltaic system was installed in **Napa Valley, California in 2011 on the Far Niente winery**

Currently 1.1 gigawatt (GW) worth of floating solar around the globe.

Growth in 4 years of 100x!

Global market could potentially support up to 400 GW worth of total capacity.

Hydropower projects, wastewater treatment plants and agricultural systems are ideal for this application.
Floatovoltaics – Pros/Cons

Pros:

Doesn’t require viable farmland.

Little to no site lease cost (who owns the lake surface?).

Would provide shading for fish habitat, reduces algae growth and water evaporation.

No heavy equipment, pile driving/screws, roads, fencing, etc.

Boosts efficiency (~10%) do to evaporative cooling in the summer.

Typically located near to the load.

Not affected by lake ice formation.

Cons:

Installers need training (only a few installers in US, one located in N. Cal.).

Needs anchor system (lake bottom, possibly shore).

Underwater cabling (depending on distance from shore).
Questions?