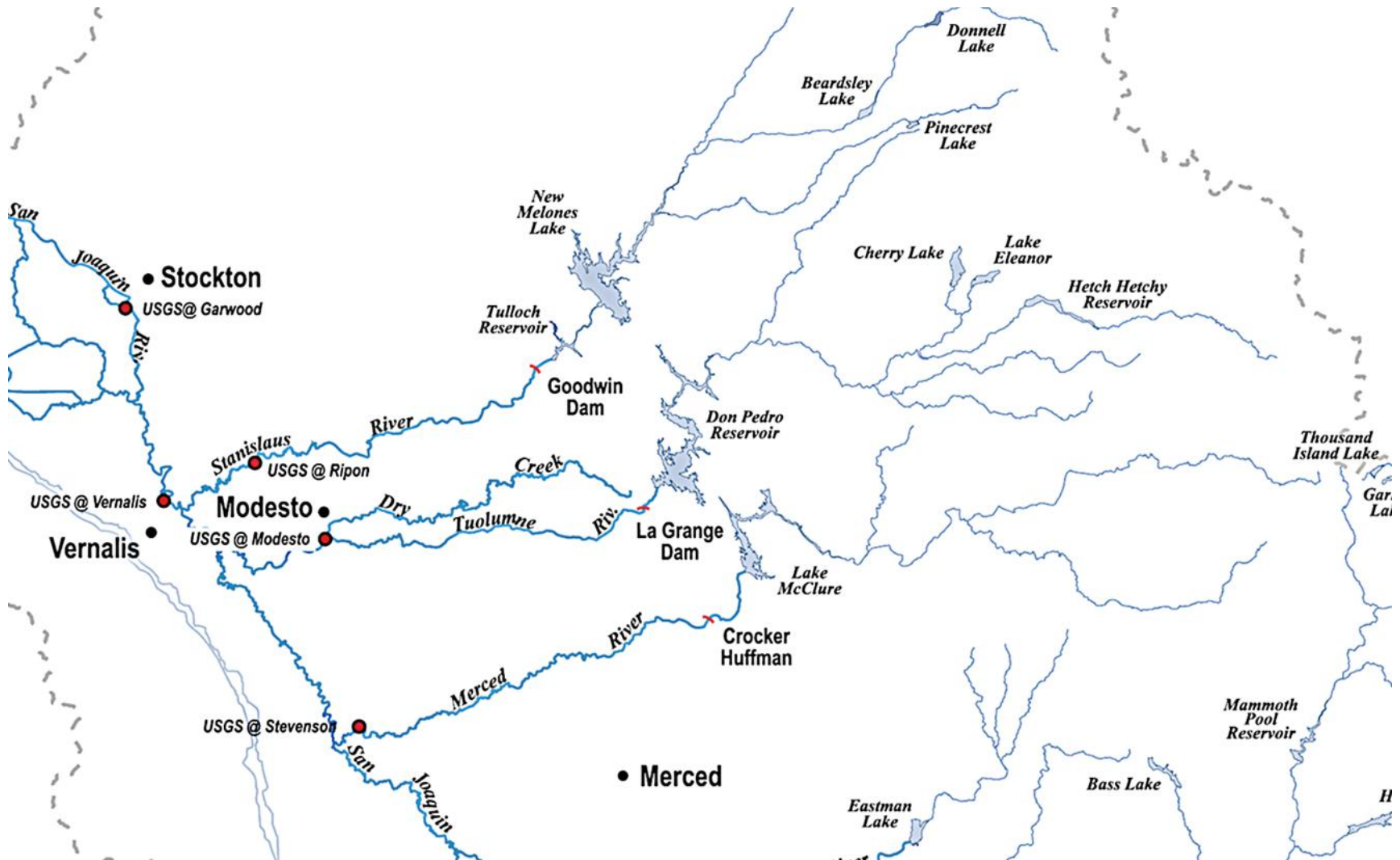


Draft Technical Appendices for the Substitute Environmental Document

San Joaquin River Flow and Southern Delta Water Quality Objectives and Program of Implementation

Public Information Session
March 20, 2012

Lower San Joaquin River Watershed



Alternatives Modeled

- SED Alternatives: 20%, 40% and 60% of unimpaired flow (within constraints)
- Each alternative compared to baseline (current) conditions
- Baseline (current) conditions as modeled by CALSIMII
- Alternatives modeled with State Board staff water supply effects model

Agricultural Economic Effects of Lower San Joaquin River Flow Alternatives

3-Step Modeling Approach

- Water Supply Effects (WSE)
- Statewide Agricultural Production (SWAP)
- Impacts Analysis for Planning (IMPLAN)

Water Supply Effects (WSE) Model

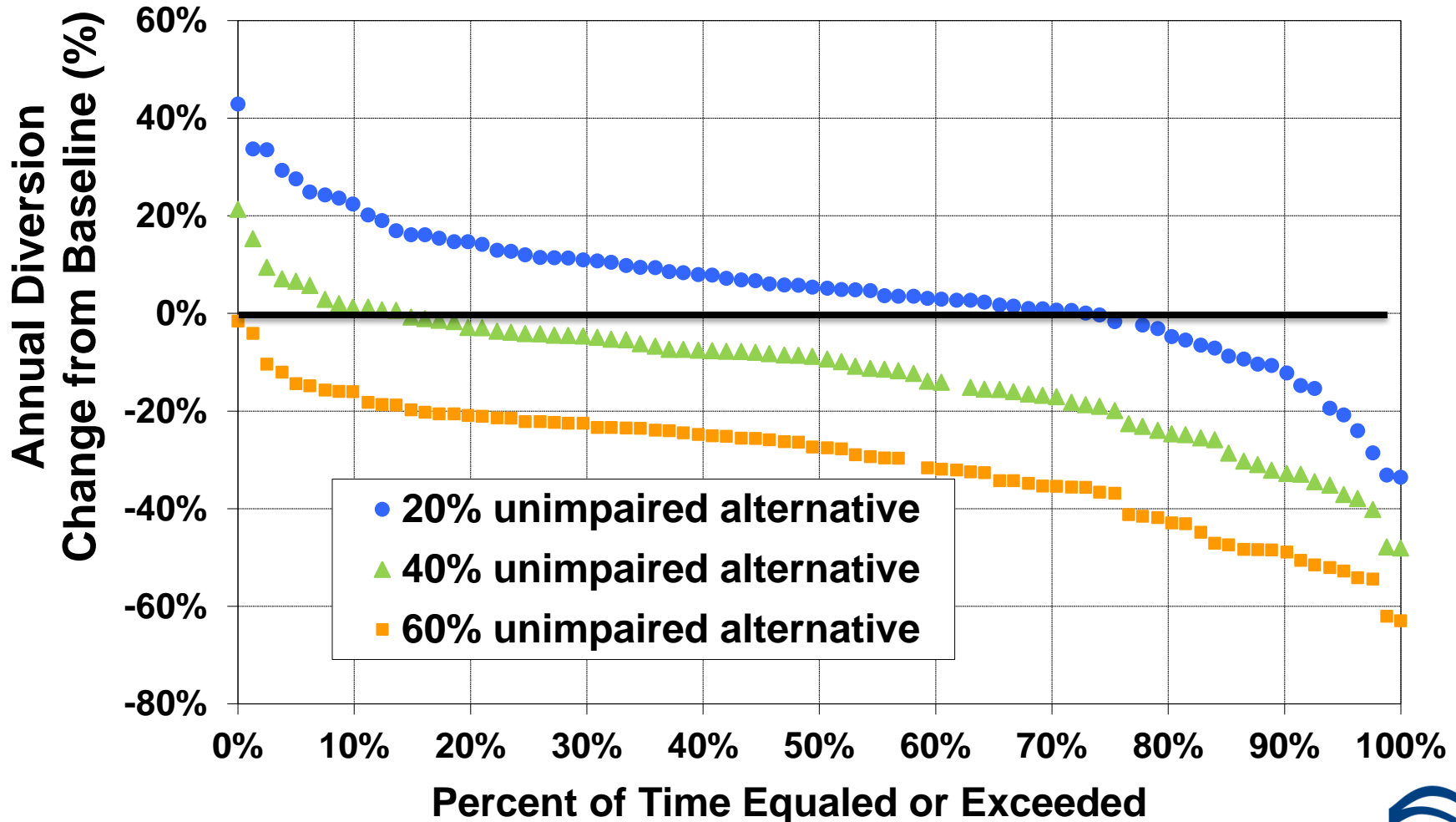
- Monthly water balance spreadsheet model
 - Allowable diversions based on user-defined delivery curves
 - Calculates reservoir releases for required river flows
- 82 years of inflows, evaporation, and downstream accretions from CALSIM II
- Peer-reviewed in October 2011

Average Annual Effect

Alternative	Stanislaus (TAF)	Tuolumne (TAF)	Merced (TAF)	Project Area (TAF)
20%	+96	-5	-10	+83
40%	+4	-172	-87	-255
60%	-115	-328	-163	-606

Alternative	Stanislaus (%)	Tuolumne (%)	Merced (%)	Project Area (%)
20%	+18 %	0 %	+1 %	+5 %
40%	+1 %	-19 %	-14 %	-13 %
60%	-20 %	-37 %	-29 %	-31 %

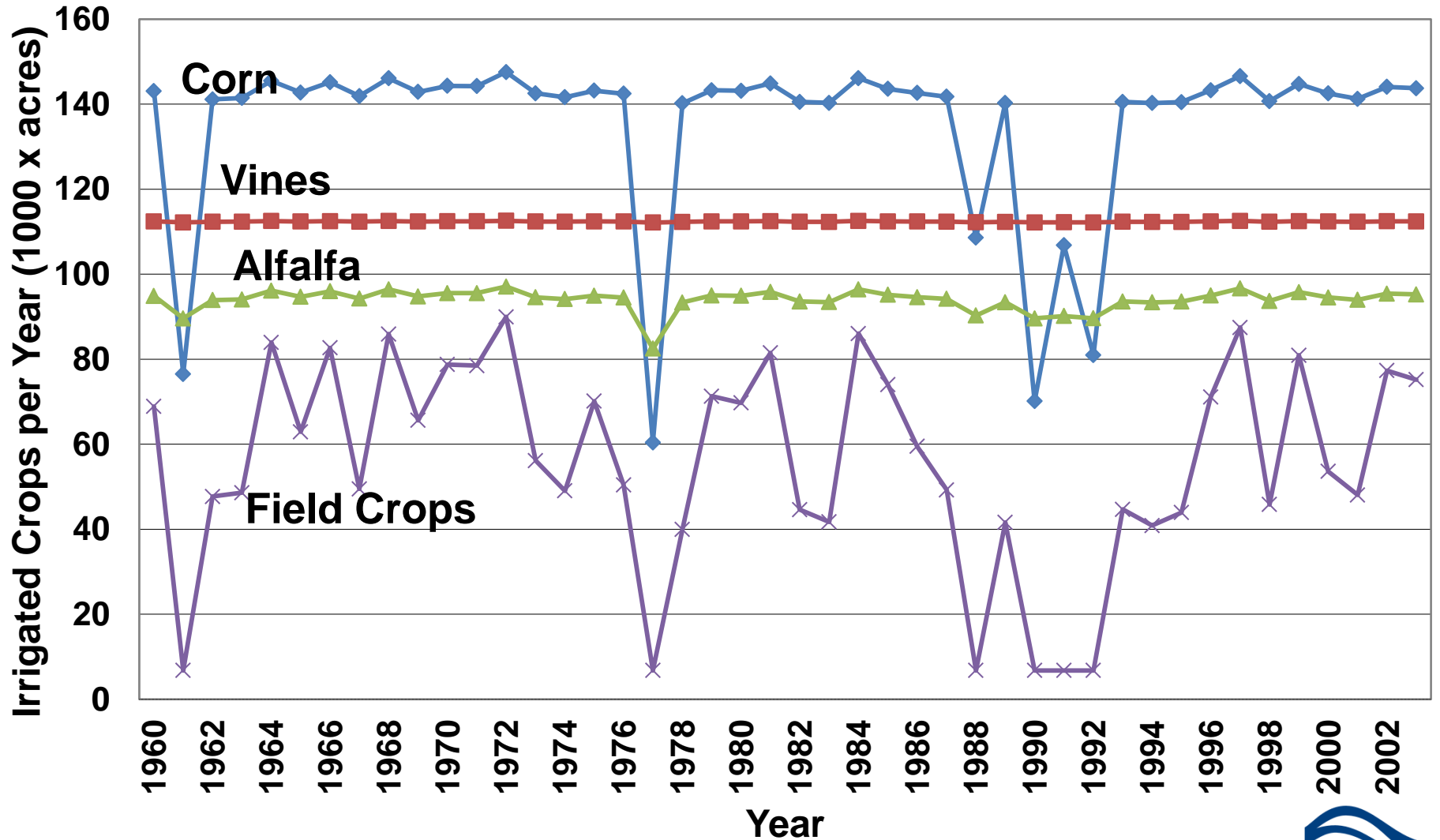
Annual Effect – All Years



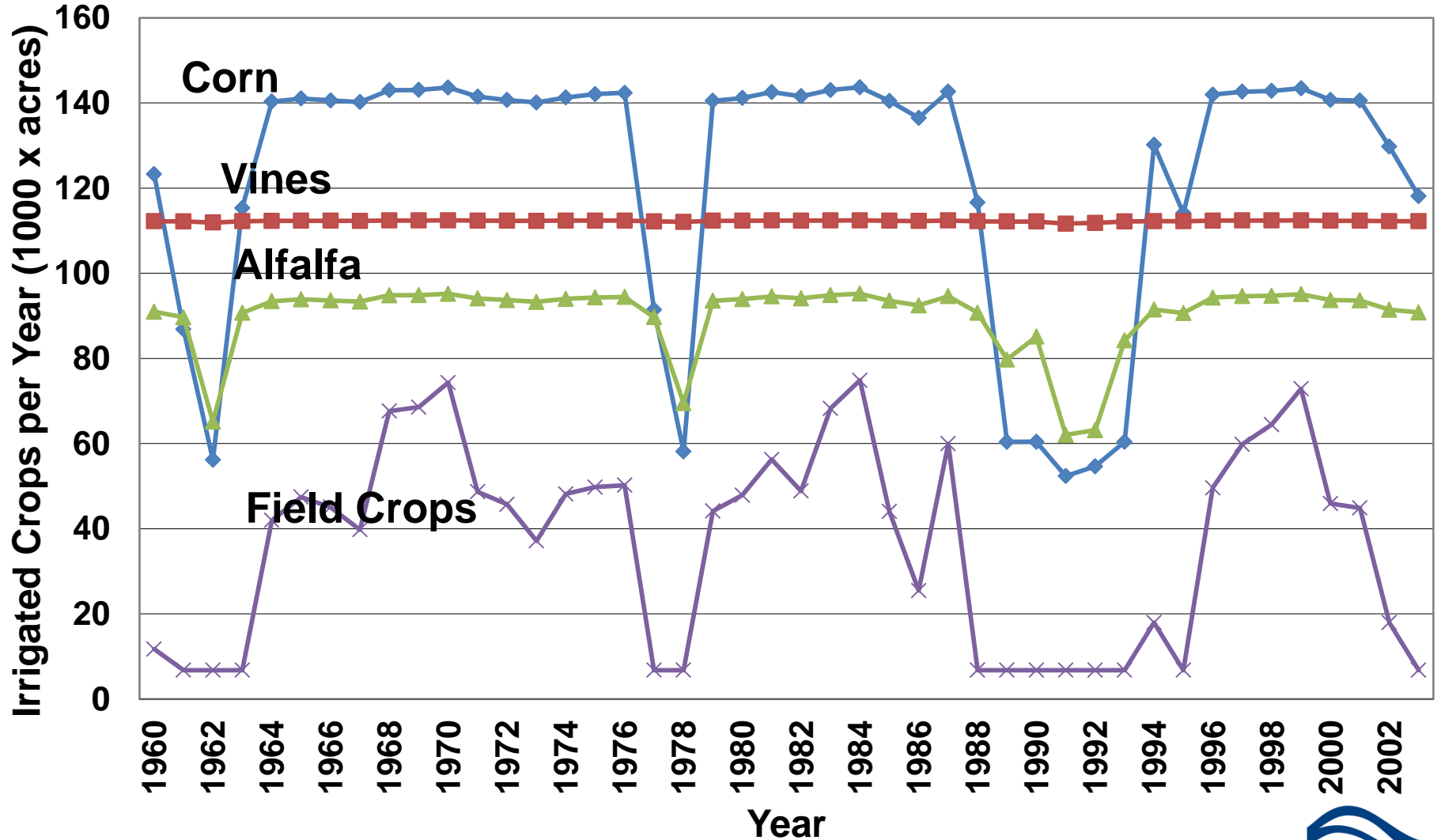
Statewide Agricultural Production (SWAP) Model

- Simulates decisions of farmers at regional level based on maximizing profit
- Developed at UC Davis, and used in several policy analysis projects
- Uses WSE and CALSIM II model outputs
- Assumes no increase in groundwater pumping to replace reduced diversions

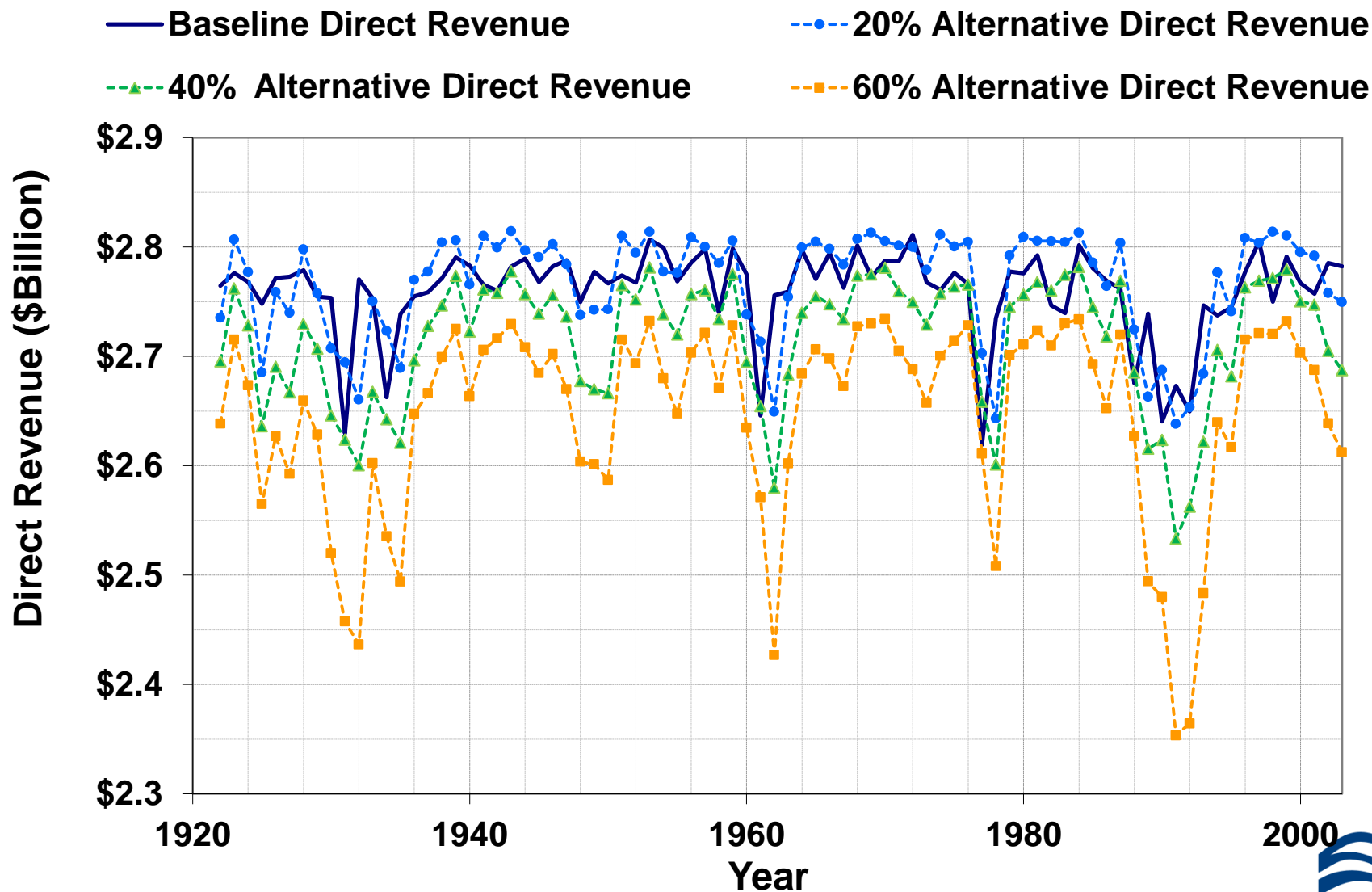
Crop Acres – Baseline



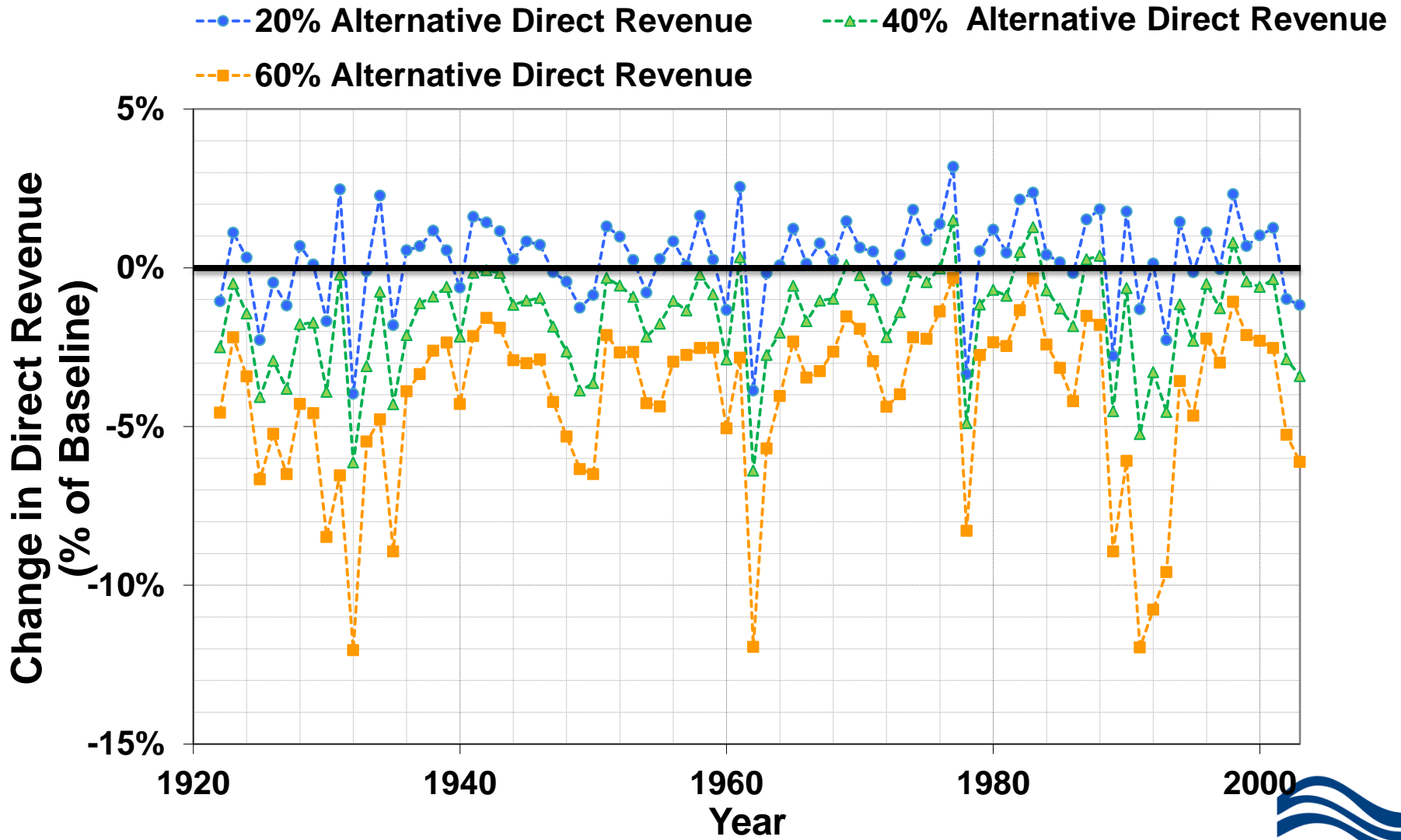
Crop Acres – 40% Alternative



Direct Agricultural Revenue



Change in Agricultural Revenue



IMPLAN Modeling

- Impact Analysis for Planning (IMPLAN) model version 3.0 (2009)
- Indirect and induced effects on connected sectors using revenue and job multipliers
- Widely used for economic analysis by government agencies (including D-1641)

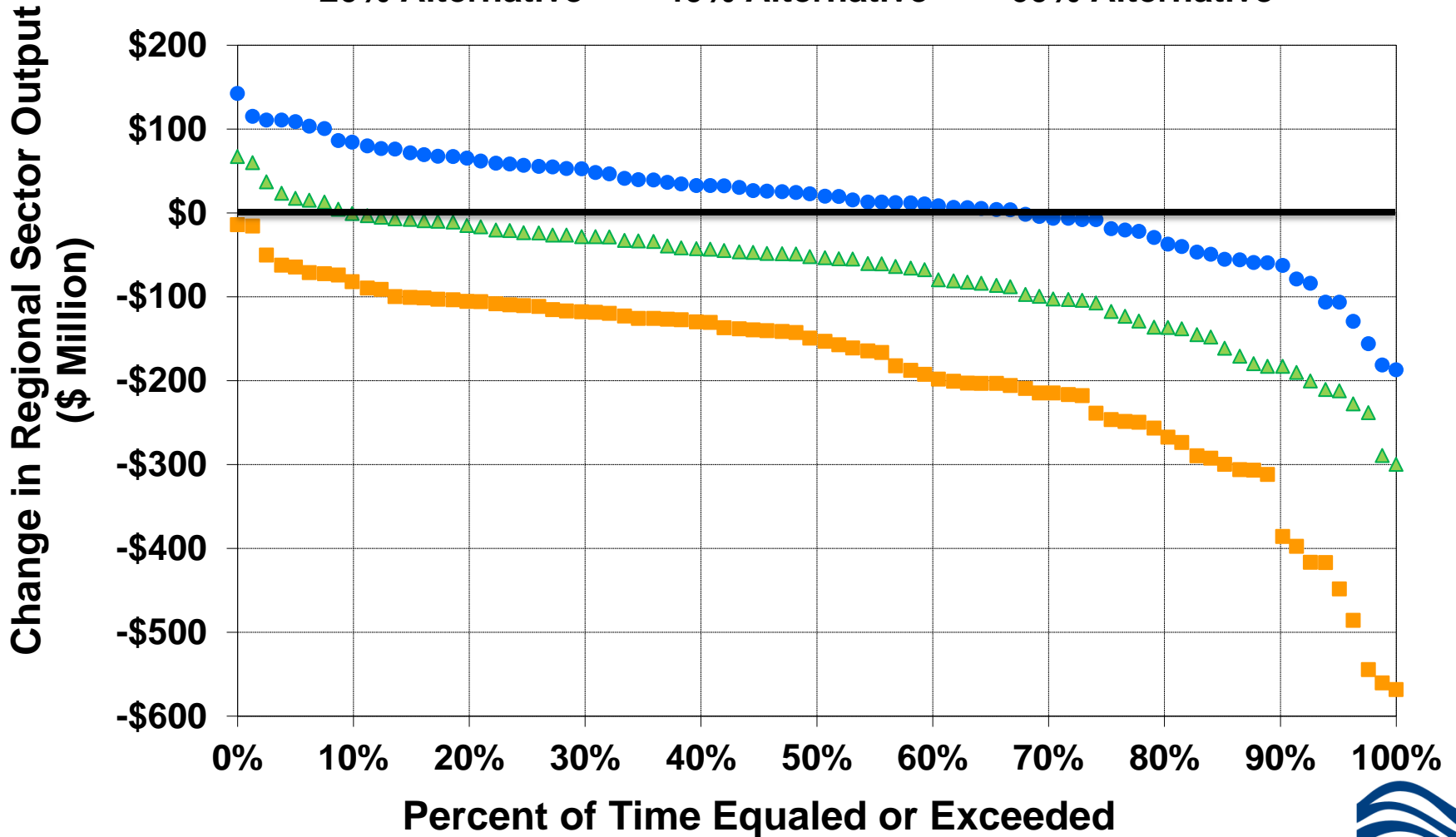
Average Annual Economic Effects

Baseline Revenue (\$2008 Million)	
Total Ag Sector Output	\$4,701
<i>Direct Revenue</i>	\$2,760
<i>Indirect and Induced</i>	\$1,941

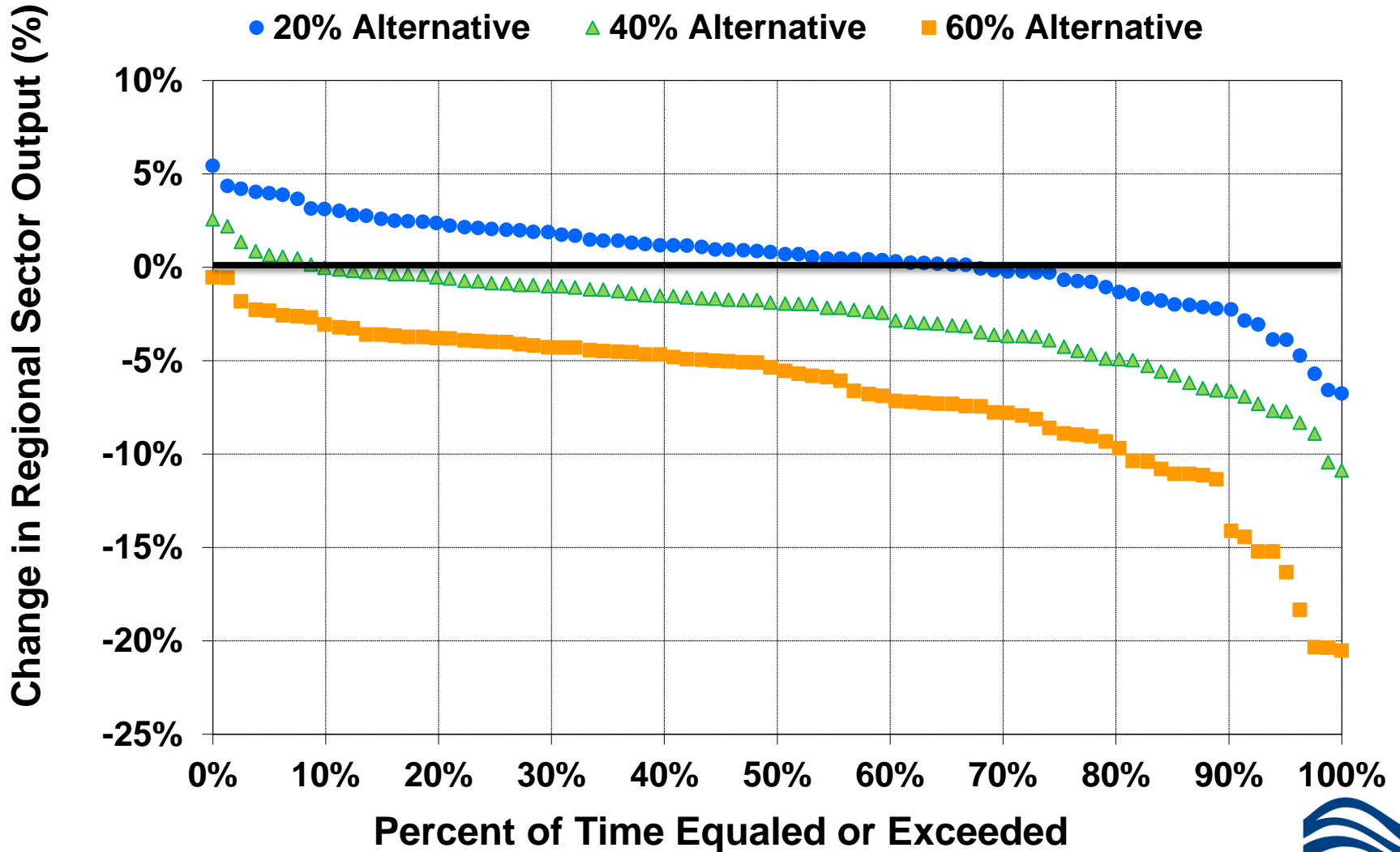
Change in Revenue (\$2008 Million)	20%	40%	60%
Ag Sector Output	+\$13	-\$75	-\$193
<i>Direct Revenue</i>	+\$7	-\$44	-\$113
<i>Indirect and Induced</i>	+\$5	-\$31	-\$80
% of Sector	+0.3%	-1.6%	-4.1%

Change in Annual Economic Output

● 20% Alternative ▲ 40% Alternative ■ 60% Alternative



Change in Annual Economic Output



Average Annual Employment

Baseline Employment (# jobs)	
Total Ag Sector	31,787
<i>Direct Revenue</i>	13,080
<i>Indirect and Induced</i>	18,707

Change in Regional Jobs (# jobs)	20%	40%	60%
Total Ag Sector	+86	-504	-1,302
<i>Direct</i>	+35	-207	-536
<i>Indirect/Induced</i>	+50	-297	-766
<i>% of Sector</i>	+0.3%	-1.6%	-4.1%

Questions?