GLEN CANYON DAM LTEMP EIS STAKEHOLDER WEBINAR

December 3, 2013
1 p.m. to 4 p.m. MT

Web address: http://anl.adobeconnect.com/ltemp_seminar/
Call-in number: 1-888-850-4523
Passcode: 587220#

Purpose: Discuss proposed LTEMP socioeconomics analysis process with stakeholders

Agenda

1:00	Net Economic Value of Recreation	Dave Harpman, Reclamation
2:00	Regional Economic Analysis	Tim Allison, Argonne
3:00	Passive Use Survey	Bruce Peacock, NPS
3:45	Questions	
4:00	Adjourn	

Socioeconomic Analyses for the Glen Canyon LTEMP EIS

Version 11/20/2013 [final]
Intro_StakeholderBriefing11-20-2013.ppt

Collaborative Analysis Effort

- Bureau of Reclamation
- National Park Service
- Argonne National Laboratory

Economic Study Components

- Hydropower [Argonne National Lab]
- Recreation Value [Reclamation]
- Regional Effects [Argonne National Lab]
- Nonuse Value [National Park Service]

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Managing Water in the West

Net Economic Value of Recreation for GC LTEMP EIS Alternatives

U.S. Department of the Interior
Bureau of Reclamation

Version 11/20/2013
[final]

Net Economic Use Value

- **The net economic use value (NEV) of recreation depends on:**
  - **the level of recreation use.**
  - **the (nonmarket) economic value of that use.**
- **Our focus is on those activities which are directly affected by reservoir and river operations.**

Geographic Scope of Analysis

- Lake Powell
- Glen Canyon
- Upper Grand Canyon
- Lower Grand Canyon
- Lake Mead

Approach

To meet the EIS schedule and for budgetary reasons, a benefits transfer approach will be employed for this analysis.

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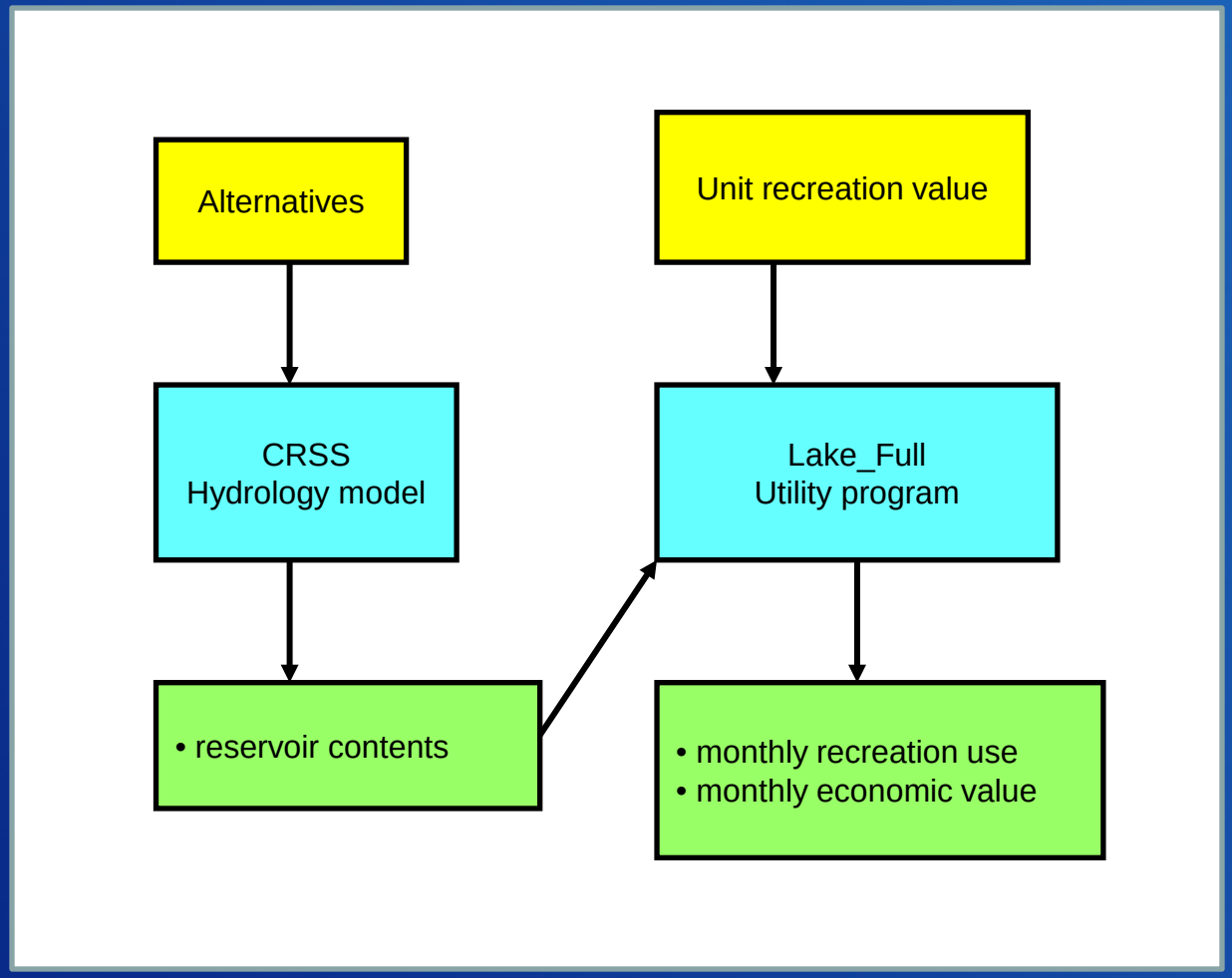
Features of the Analysis

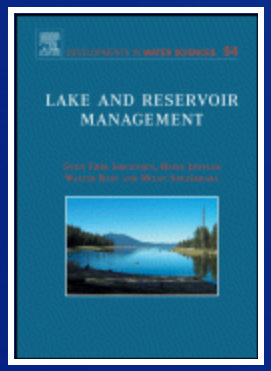
- To maximize decision-making relevance, within the constraints of the existing studies, a monthly time-step is employed throughout.
- A multiple year, multiple trace analysis approach is used.

Conceptual Approach-- Lakes



Lake NEV Estimation

- Monthly NEV estimates for Lakes Powell and Mead are based on monthly visitation relationships developed by Neher, Duffield and Patterson (2013) and existing estimates of unit NEV from the literature.



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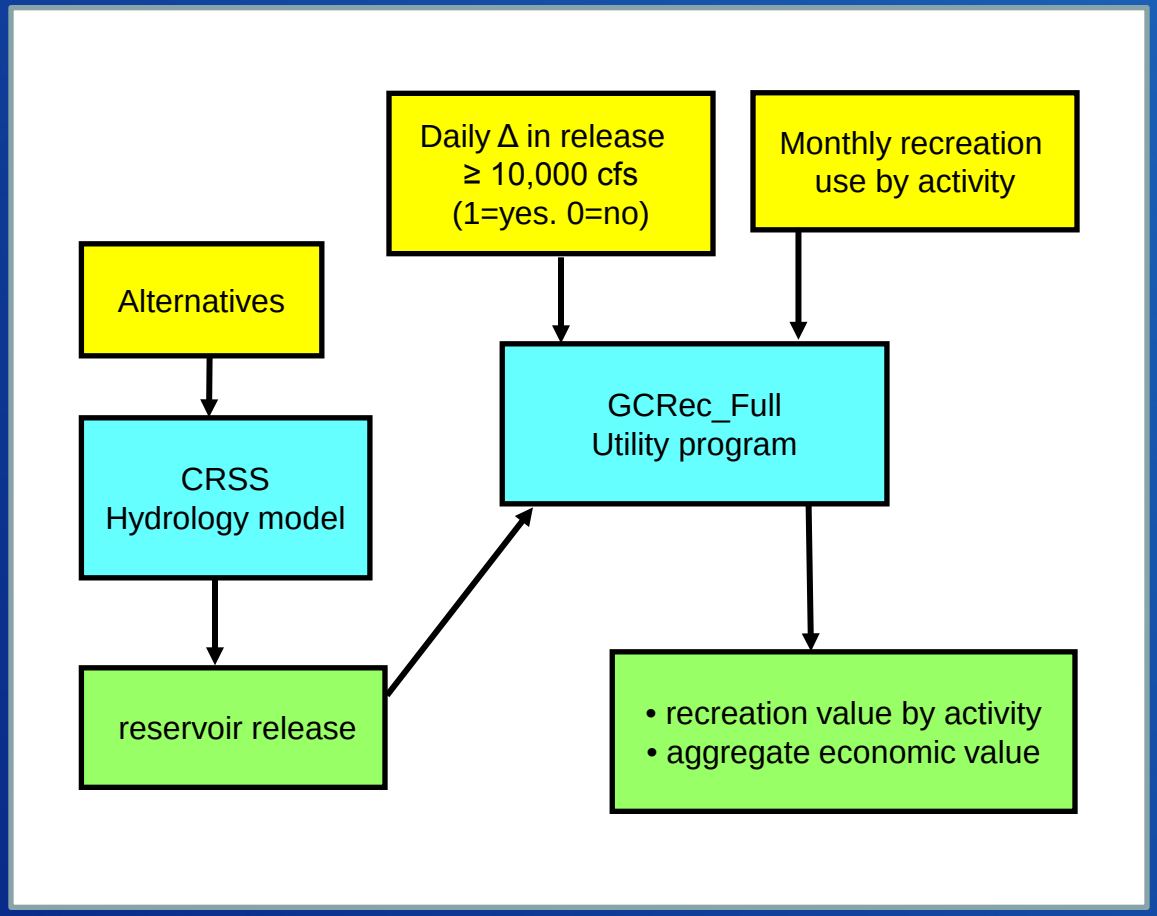
Conceptual Approach-- River



Glen and Upper Grand Canyon NEV Estimation

- The Glen & Upper Grand Canyon estimates utilize monthly NPS visitation data and NEV relationships estimated by Bishop et al (1987).

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Lower Grand Canyon NEV Estimation

- Monthly NEV estimates for the Lower Grand Canyon, from Diamond Creek downstream, are based on assumed visitor use and adjusted NEV values from Bishop et al (1987).

Summary

Location/Reach	Activity	Recreation Use (trips)[1]	Economic Value ($/trip)
Glen Canyon	Day Use Rafting	Use is either unaffected by changes in flow or is held constant.	Economic value varies with flow and fluctuations. It is estimated using Bishop et al (1987)
	Angling		
Upper Grand Canyon	Private WW boating		
	Commercial WW boating		
Lower Grand Canyon	Private WW boating		Economic value varies with flow and fluctuations. It is assumed to be a proportion of Bishop et al (1987).
	HRR 1-day WW boating		
	HRR overnight WW boating		
	HRR day use rafting		
Lake Powell	General recreation	Recreation use varies with lake contents. It is estimated using Neher, Duffield and Patterson (2013)	Literature value.
Lake Mead	General recreation		

[1] A trip is one individual recreating at the site. The duration of a trip is variable.

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Computational Framework

- Lake and river NEV utility programs were developed to facilitate analysis.

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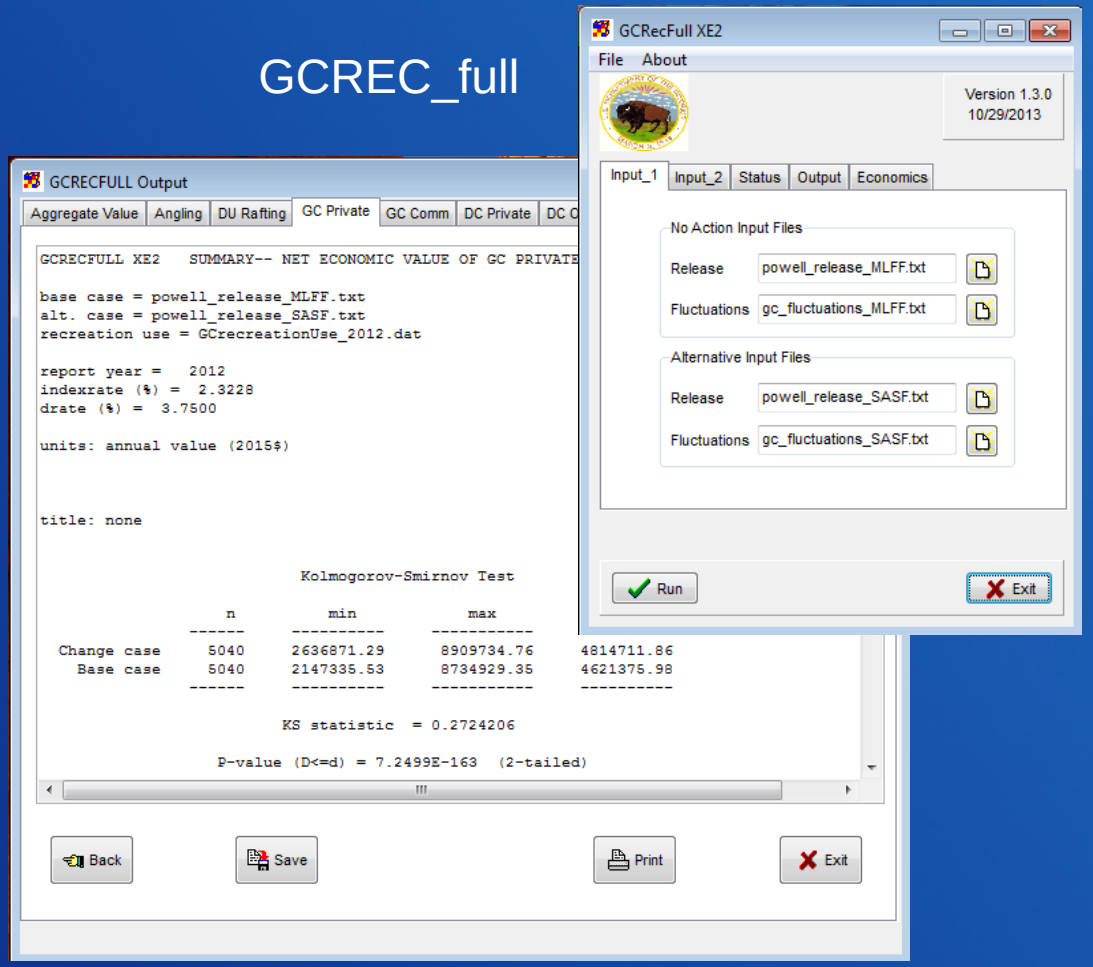

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Purpose of the Utility Programs

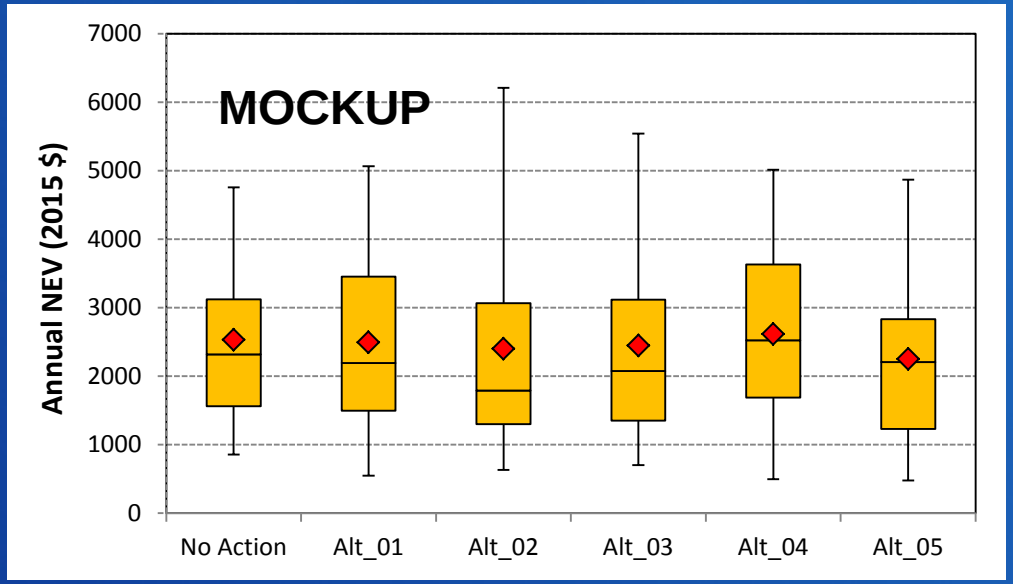
- Compute the monthly NEV for each activity and site for 12 months × 48 years × 105 traces.
- NEV's are aggregated, indexed, escalated and discounted, as appropriate.
- The moments (mean, median, 90%, 10% etc) of the NEV distributions are then extracted and reported.
- Statistical analysis.

Comparison of Effects

- These NEV results will allow the effects of each alternative on various recreational activities and locations to be compared.
- Value estimates are commensurate with other estimated socioeconomic effects.

Expected Outputs

- Technical report.
- Numeric and graphical comparisons.



	No Action	Alt_01	Alt_02	Alt_03	Alt_04	Alt_05
nobs	50	50	50	50	50	50
mean	2529.0	2493.9	2400.0	2445.6	2613.4	2250.9
std. dev	1263.7	1392.0	1741.5	1550.2	1362.6	1277.5
minimum	597.0	147.0	214.0	237.0	98.0	127.0
05th perc	857.9	848.4	632.7	702.1	496.1	476.1
25th perc	1562.8	1493.8	1299.3	1353.3	1687.8	1229.0
median	2316.5	2191.0	1790.0	2075.5	2525.0	2207.5
75th perc	3120.0	3454.8	3063.3	3115.8	3631.8	2830.5
95th perc	4755.0	5065.0	6206.5	5538.6	5010.9	4866.5
maximum	5918.0	6012.0	8100.0	7209.0	5547.0	5587.0

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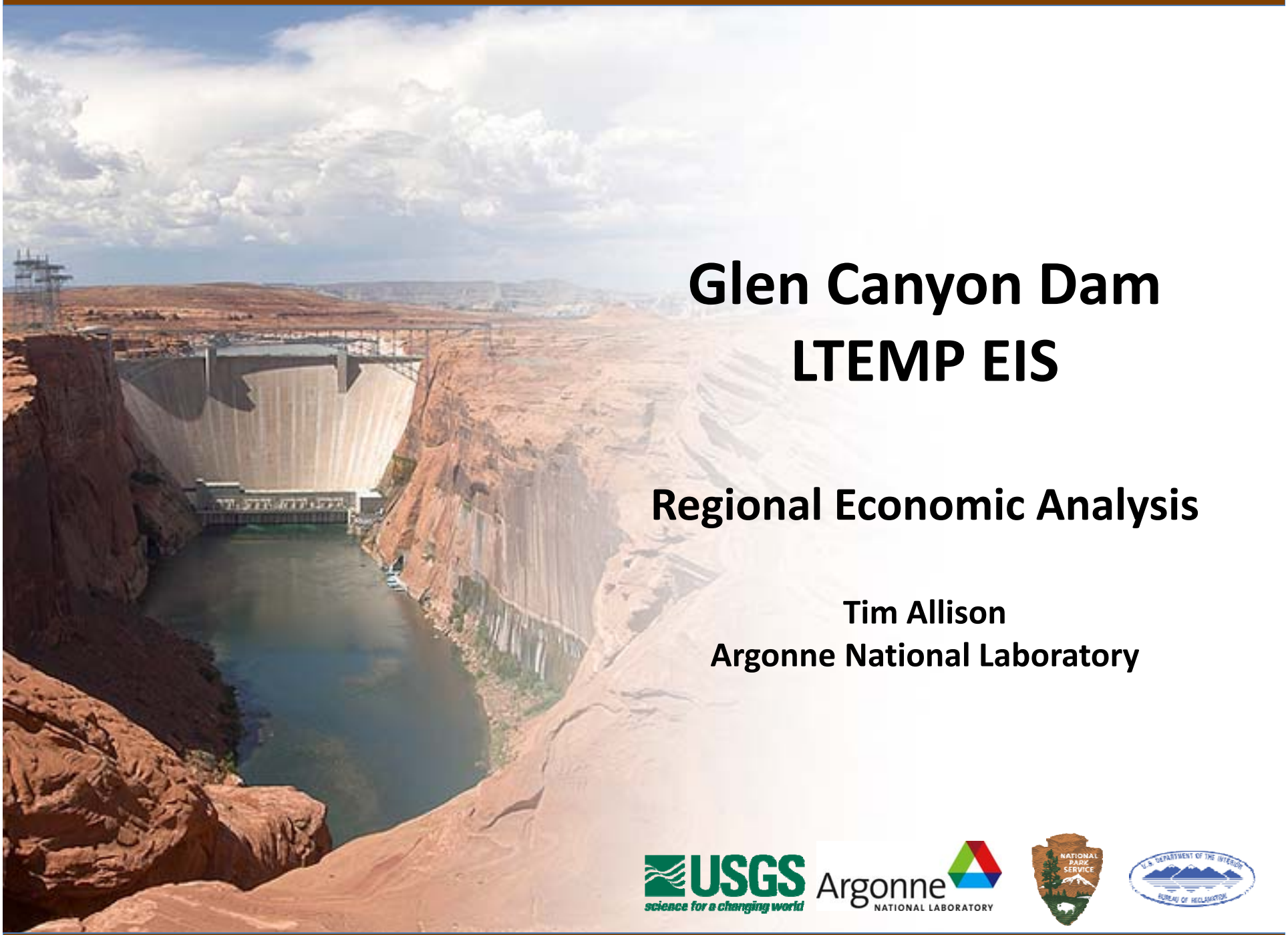
Questions ?

David Harpman: dharpman@usbr.gov
(303) 445-2733



Glen Canyon Dam
LTEMP EIS

Regional Economic Analysis

Tim Allison
Argonne National Laboratory

USGS science for a changing world
Argonne NATIONAL LABORATORY
NATIONAL PARK SERVICE
U.S. DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION

Regional Effects

- Changes in recreational activity
- Changes in electricity prices, additional customer utility generating capacity

Recreational Impact Analysis

- Analysis based on changes in recreational expenditures by alternative
- Analysis in the region in which the majority of current recreational expenditures occur
  - Coconino County and Mohave County, AZ
  - Garfield County, Kane County, San Juan County, and Washington County, UT

Recreational Expenditures

- Expenditure items
  - Gas, food and drink, lodging
  - Outdoor equipment
  - Guide services
- Expenditures by type of activity
  - angling
  - rafting
  - boating

Total Recreational Impacts

- Includes direct and indirect effects
  - Direct effects are employment and income effects in sectors of the economy in which recreational expenditures occur
  - Indirect effects are employment and income effects in sectors providing materials, equipment, services to sectors in which recreational expenditures occur

Impacts of Current Recreational Expenditures

- Total effects, 2010 (in counties within 60 road miles, Stynes 2011)
  - Glen Canyon NRA
    - 2,280 jobs (ftes), $71m in income
  - Grand Canyon NP
    - 6,170 jobs (ftes), $173m in income
  - Lake Mead NRA
    - 2,450 jobs (ftes), $88m in income
  - Additional NPS payroll effects

Analysis Data

- Changes in visitation rates, by alternative, river reach and year from the NEV model
- Typical per capita expenditure data by type of activity from existing literature
- Combine to produce changes in expenditure by activity type, by year, and alternative

Estimation of Total Economic Impacts

- Map changes in expenditures by item (gas, food, lodging, etc.) into appropriate sectors in IMPLAN input-output model
- Estimate indirect effects and total effects, by alternative, activity type and year
  - Employment (ftes), income ($m), total value added ($m)

Questions?

??

Electricity Impact Analysis

- Changes in state electricity prices with each alternative
- Capacity expansion expenditures resulting from each alternative
- Western electricity serves customers in a seven-state region
  - Arizona, Colorado, Nebraska, Nevada, New Mexico, Utah, Wyoming
- Ratepayer analysis conducted as part of Argonne hydropower analysis

Impacts of Western Power Generation

- For the eight largest Western customers, in 2009
  - Western provided 6.2% of energy, 5.9% of capacity
  - Two customer utilities relied on Western for more than 25% of their energy
  - Three utilities relied on Western for more than 20% of their capacity

Impacts of Western Power Generation

- The eight largest Western customers provide 22.9% of total retail sales in the seven state-region, and 12.5% of capacity
- GCD provides a large share of energy and capacity provided by Western

Analysis Data

- Current and forecasted electricity prices, by state, from EIA data and other sources
- Changes in electricity prices by customer class, by state, by alternative from hydropower analysis
- Demand response to electricity price changes (elasticities) by customer class from the literature
- Capacity expansion capital and operating expenditures by alternative and type (materials, equipment, services, direct and indirect labor) from appropriate projects (fuel type, technology, size, location)

Estimation of Total Economic Impacts

- Combine sectors in state input-output models to corresponding customer classes using IMPLAN input-output data
- Calculate electricity expenditure shares for each customer class with IMPLAN data
- Map capacity expenditures by type (materials, services, direct and indirect labor, etc.) into appropriate sectors in IMPLAN input-output model

Total Economic Impacts

- Estimate indirect and total effects, by alternative, state and year
  - Changes in aggregate electricity prices
    - Employment (ftes), income ($m), total value added ($m)
  - Capacity expansion
    - Employment (ftes), income ($m), total value added ($m)

National Park Service
U.S. Department of the Interior

Environmental Quality Division

Total Economic Values for the Glen Canyon Dam Long Term Experimental and Monitoring Plan

EXPERIENCE YOUR AMERICA

What is the study purpose?

- Provide NPS managers and partners with current information about:
  - Values held by the American public for Grand Canyon riparian resources
  - Management alternatives to protect those resources
- Data gathered will include information on:
  - Individual characteristics and familiarity with the park and river ecosystems
  - Individual activities
  - Individual opinions on park management

What will be measured?

- Total economic value
  - Two components:
    - Direct use value
    - Passive use value
  - People can hold both direct and passive use values
  - Difficult to disentangle direct and passive use values
  - Valuation methods focus on total economic values

What will be measured?

- ***Direct use values:*** values derived from physical interaction with resources
  - Examples
    - ***Consumptive uses:*** values for fishing
    - ***Non-consumptive uses:*** values for wildlife viewing and hiking
  - Involve observable behavior
  - Current or future use
  - On or off-site use

What will be measured?

- ***Passive use values:*** values derived independently from physical interaction with resources
  - Value of knowing resources exist or will be preserved in a given condition
  - Motivations include:
    - Existance
    - Bequest
    - Altruism
  - Courts have recognized passive use values as valid (*Ohio v. DOI 1989*)

Has this been done before?

- Welsh et al. 1995 “Glen Canyon Dam, Colorado River Storage Project, Arizona: Nonuse Values Study Final Report”
  - Prepared as part of the Glen Canyon Environmental Studies (GCES) effort to explore relationships between dam operations and downstream resources
  - Reviewed by the National Research Council:

”While not completed in time to be reported in the final EIS, the nonuse value results are an important contribution of GCES and deserve full attention as decisions are made regarding dam operations.”

National Research Council 1996

What is the study design?

- Two main components:
  - Replication
  - Estimation
- ***Replication*** of Welsh et al. 1995, updating the background materials for relevancy
  - Establish reproducibility of measuring total economic value in this context
  - The underlying issues and questions have been thoroughly tested and implemented
  - Utilize the same methodology – contingent valuation

What is the study design?

- ***Estimation*** of total economic values of LTEMP alternatives
  - Methodology: conjoint analysis
  - Respondents are asked their preferences among scenarios with different management ***outcomes***
    - River beaches
    - Native fish populations
    - Trout populations
    - Hydropower production
    - Cost
  - Note – respondents are not asked their preferences among management ***inputs***

What is the study design?

- The indicated tradeoffs among management outcomes allow the estimation of values for each outcome individually
- Values of LTEMP alternatives are then estimated by setting outcome levels to match those of respective alternatives and adding their individual values together
- Note – outcome levels in the survey are set statistically to maximize estimation efficiency – they are intended to represent the range of potential impacts

What is the study design?

- The estimation survey will have two strata:
  - Local household sample (8 counties surrounding dam and river corridor)
  - National household sample (rest of the US)
- A nonresponse bias phone follow up will also be conducted

What are the next steps?

- Survey implementation: pilot and main surveys
  - 60-day Federal Register notice – ***completed***
  - Prepare for review by DOI – ***in progress***
  - Review and approval by DOI
  - Review and approval by OMB
    - 30-day Federal Register notice period
    - Discussions with principal investigator
  - Survey implementation
- Data analysis
- Report writing

Environmental Quality Division

Fort Collins, Colorado

National Park Service
U.S. Department of the Interior

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