PGDP Future Vision Project

KRCEE

UK

Kentucky Water Research Institute

www.uky.edu/krcee/project23.html

Presentation Outline

- Project objectives/study team
- Process and methods
  - listening tour and outcomes
  - focus groups: methods & scenario scoring
  - public information meetings
  - public scenario meetings: methods & results
- Results analysis
- Data limitations
- Project accomplishments
- General land use findings
- General public engagement findings
- Recommendations

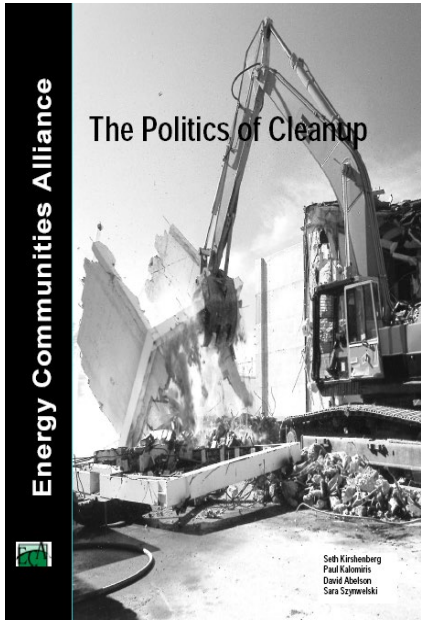
Project Objectives

- Provide scoping/facilitation/document support for activities related to developing a publicly acceptable PGDP End State Vision for the PGDP based on "Politics of Cleanup" approaches.
- Develop and integrate public, stakeholder, regulatory, & technical community visions thru meetings and development of a “PGDP End-State Vision Document”.
- Integrate activities of public, stakeholder, regulatory, & technical personnel.
- Provide technical support to foster understanding of technical issues related to development and finalization of “PGDP End-State Vision Document”.

Project Team

- DOE Technical Liaison
  - Rich Bonczek (DOE)
- UK Technical Liaison
  - Steve Hampson (University of Kentucky)
- Project Manager
  - Dr. Lindell Ormsbee (University of Kentucky)
- Community-Based Participatory Communication
  - Dr. Chike Anyaegbunam (University of Kentucky)
- Structured Public Involvement
  - Dr. Ted Grossardt (University of Kentucky)
- Casewise Evaluation
  - Dr. Keiron Bailey (University of Arizona)
- Scenario Visualization
  - John Ripy, Ben Blandford (University of Kentucky)
- Facilitation/Logistics/Technical Support
  - Anna Hoover, Mitchael Schwartz, Jason Martin, Chas Hartman

Process Components



Guiding Principles

Qualitative Tools

•Listening Tour
•Community-Based Participatory Communication

Quantitative Tools

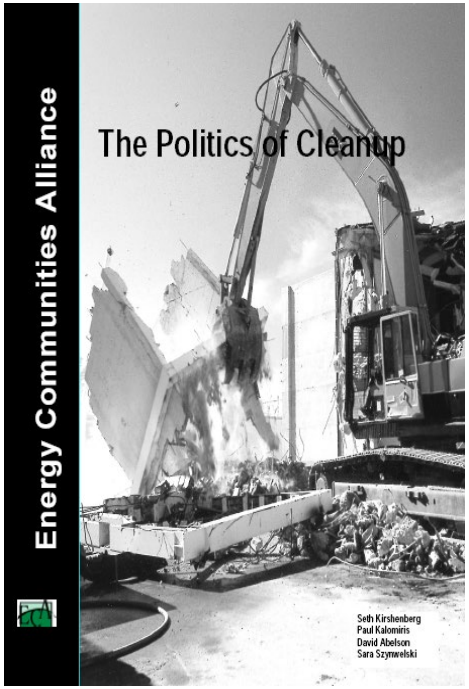
•Structured Public Participation
•Casewise Visual Evaluation

Tool Box

Evaluation Metric

Guiding Principles: Politics of Cleanup

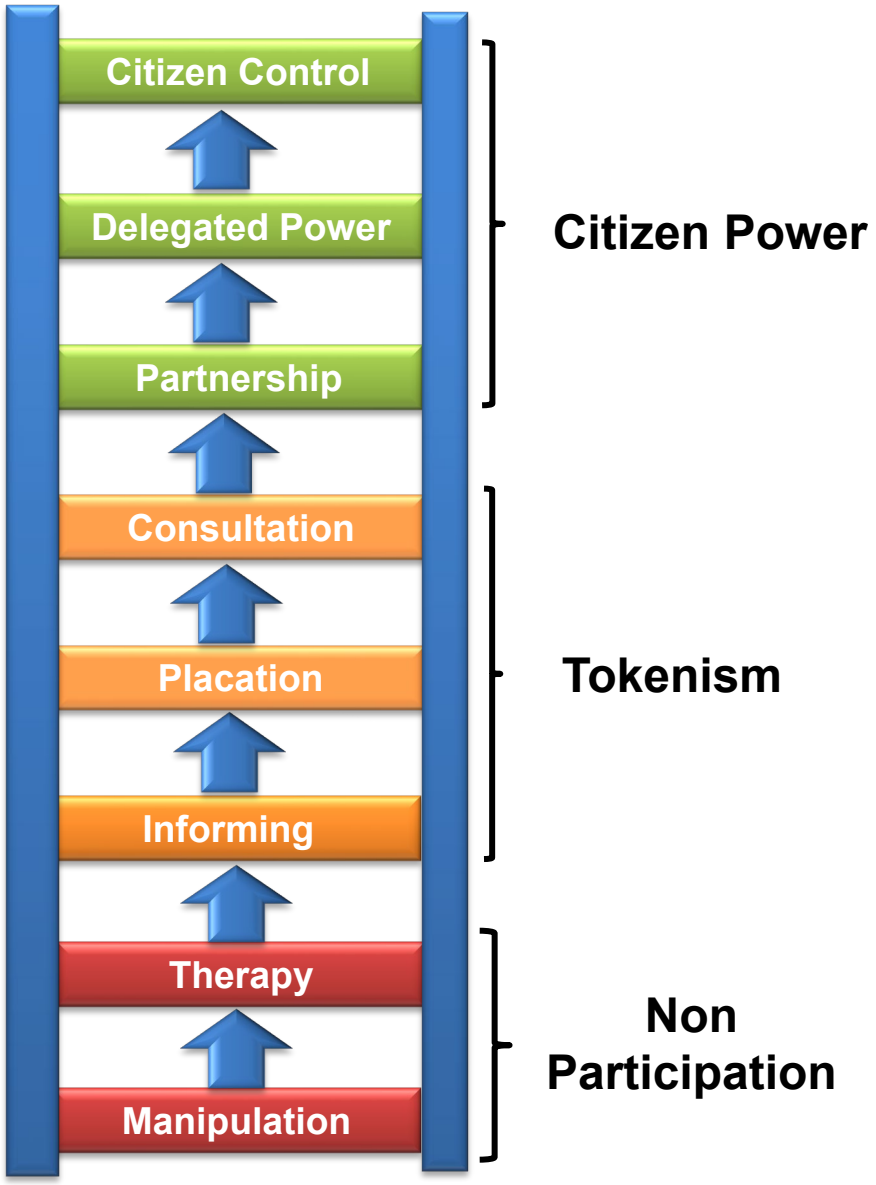
- Examined community involvement in cleanup activities in
  - Rocky Flats
  - Mound
  - Oak Ridge
- Engagement Process Requirements
  - Collaborative Process
  - Assess and incorporate community values
  - Inform and educate stakeholders
  - Provide accountability and invoke trust
  - Involve total community
  - Tailor to local community



Site-Specific Challenges

- Historic secrecy
- Distrust of government/DOE
- Critical investigations (*OMB, Washington Post, Courier Journal*)
- Perception of health impacts for workers and residents
- Economic concerns about plant closure
- "Urban" legends
  - "You can't hunt at night in the wildlife management area because the deer glow at night."
  - "If you cut off the antler of a deer in the wildlife management area, a green fluorescent ooze will emerge."
  - "They used to use uranium salt to flavor food in the workers lunch room."
  - "The workers at the site have dumped contaminated materials all over the region."
  - "There is a massive amount of gold buried out there on the site."

Arnstein Ladder of Citizen Participation

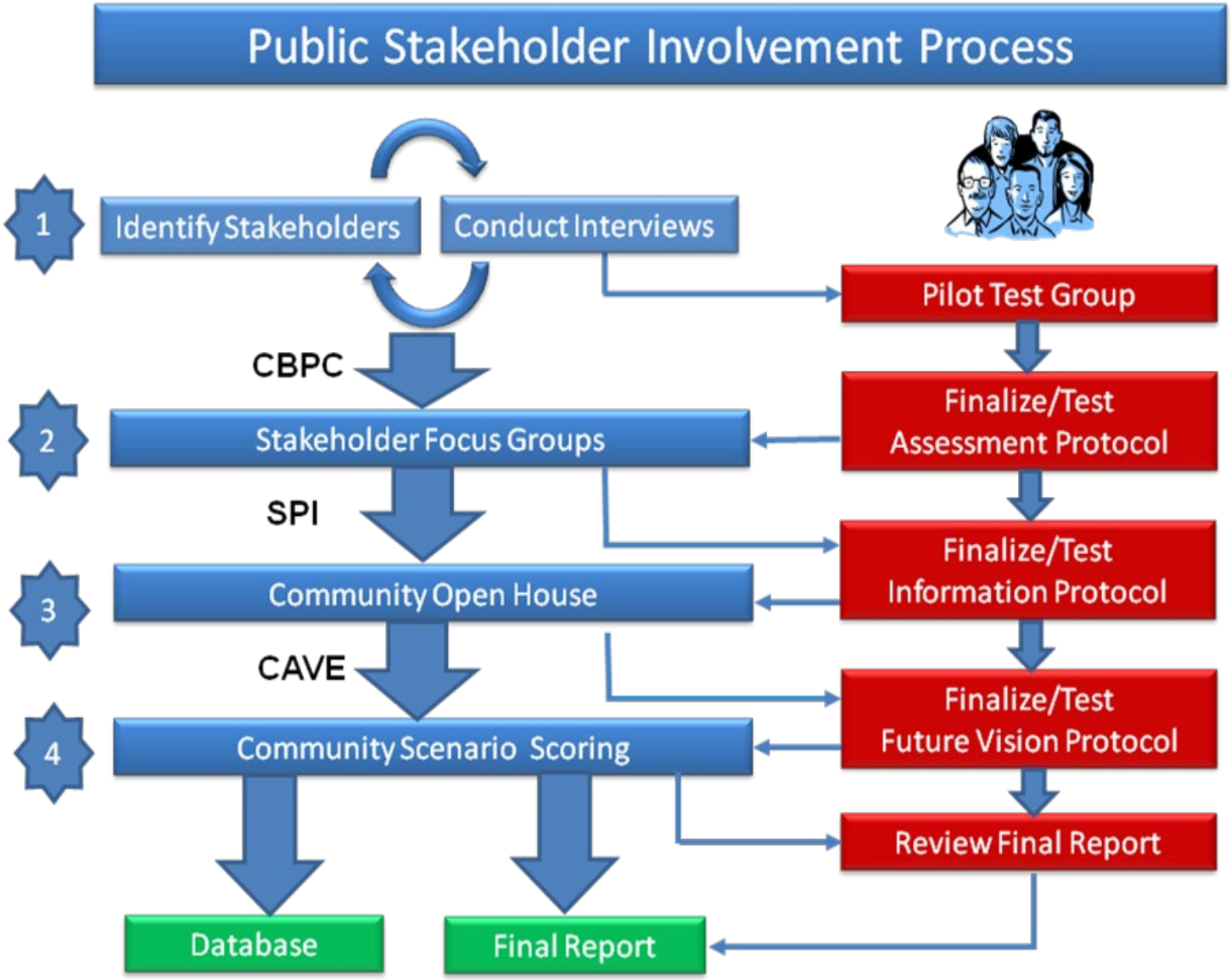


(Arnstein 1969)

The Arnstein Ladder gauges:

- Past experiences
- Ideal involvement levels
- PGDP Vision process

Project Protocol



STEP ONE: Background Research and Listening Tour

April 13, 2009 – August 5, 2009

Goals

- Identify Critical Issues
- Discover Previously-Identified Scenarios
- Distinguish Stakeholder Clusters

Background Resources

- 1995 Oak Ridge Study
- DOE RBES
- KRCEE Land Study
- ATSDR Study
- CAB Minutes
- Newspaper Archives
- 2008, 2009 DOE Public Meetings

Listening Tour

- KRCEE-Identified Stakeholders
- *Snowball Sampling*
- Stakeholder-Identified Stakeholders

Initial KRCEE-Identified Stakeholder List

- US DOE (site, regional, federal)
- Kentucky Energy & Environment Cabinet (Division of Waste Management)
- Kentucky Cabinet for Health & Family Services (Radiation Control Branch)
- Paducah Remediation Services (PRS)
- US Environmental Protection Agency
- Landowners in the Area
- Water Policy District Residents
- General Public
- Economic Development Council
- Governor's Office
- Employee Unions
- City of Paducah
- McCracken County Government
- Ballard County Government
- Paducah Area Community Reuse Organization (PACRO)
- Western KY Economic Development Council
- Citizens Advisory Board
- US Fish & Wildlife Service
- KY Department Fish & Wildlife
- Senator Mitch McConnell
- Senator Jim Bunning
- Representative Ed Whitfield
- State Senators
- State Representatives
- Active Citizens for Truth
- Media
- Chamber of Commerce
- Extension Office
- Conservation District
- Western Kentucky Wildlife Management Area
- West Kentucky Community and Technical College
- University of Kentucky - Paducah Campus
- Gun Clubs
- Dog Clubs
- Public Schools
- Tennessee Valley Authority (TVA)
- Kentucky Transportation Cabinet
- Metropolis, IL Government
- Farm Bureau
- Professional Clubs
- Service Clubs
- Tourism Council
- Arts Council
- Churches

44 different groups, organizations, or individuals

Listening Tour

- Spoke with 80 different individuals
- Confidential
- Presented proposed community engagement model and solicited feedback
- Key Questions
  - 1) specific stakeholder concerns about the PGDP's future
  - 2) perceived opportunities for the site's future
  - 3) perceived challenges for the site's long-term development
  - 4) specific long-term site usage suggestions of which stakeholders were aware or which they had developed themselves
  - 5) any additional background information
- Requested additional stakeholder identification

Stakeholder Clusters/Pilot Group

16 Stakeholder Clusters
Residents
Employees
Environmental/Health Activists
Economic Development
Healthcare
Education
Media
Religious/Spiritual
Wildlife/Recreation
Tourism
Ballard County
DOE
DOE Contractors
Paducah Government
CAB
Regulatory

Pilot Test Group

Test Focus Group Protocol
(October 27, 28, 29, 2009)
17 individuals

Final Focus Group Protocol

UK IRB Approval

STEP TWO: Community-Based Participatory Communication Focus Groups

August 5, 2009 – May 5, 2010

Goals

- Solicit community values
- Discuss perceptions about the plant's future
- Identify information gaps and credible sources

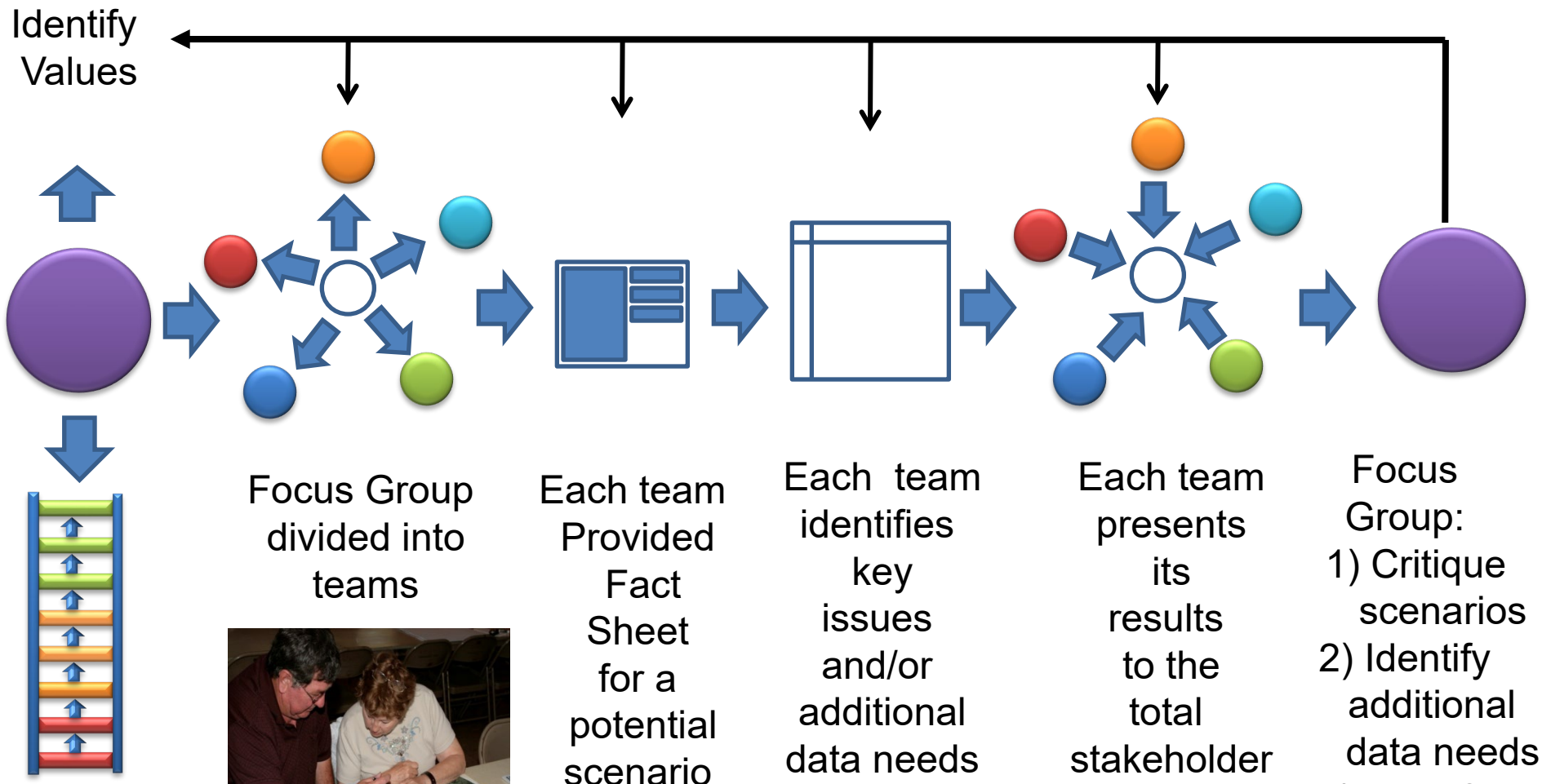
Small Group Discussions

- Blind scenario selection
- Identify scenario-related key issues/data needs
- Present scenario/discussion results to re-assembled group

Assembled Group

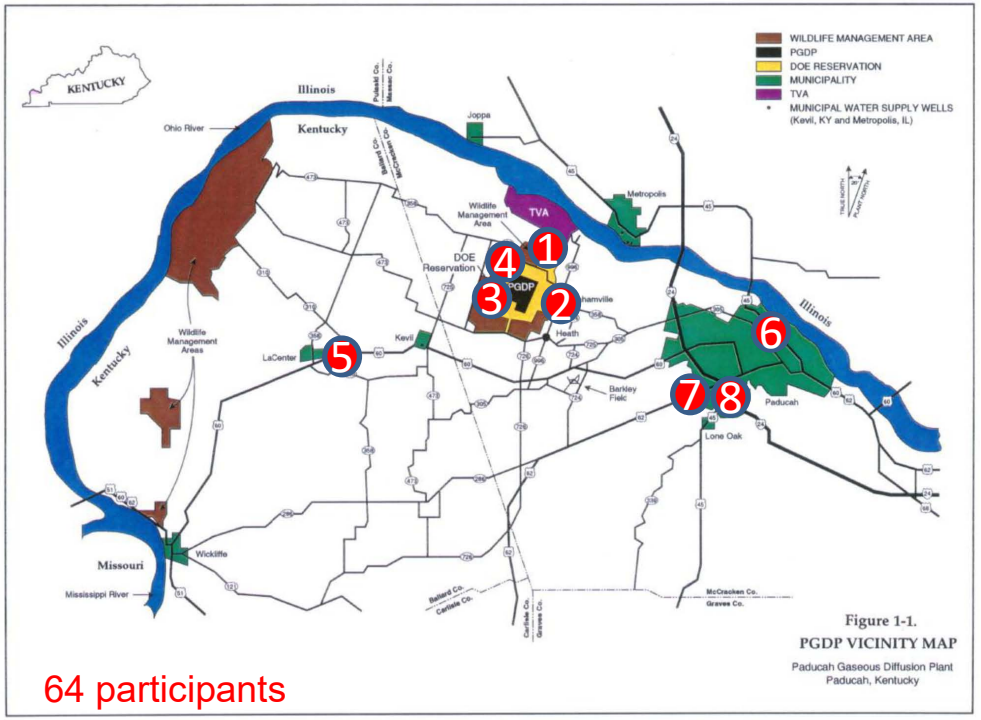
- Community values discussion
- Scenario critiques
- Information gap identification
- Credible sources

Community Based Participatory Communication (CBPC)

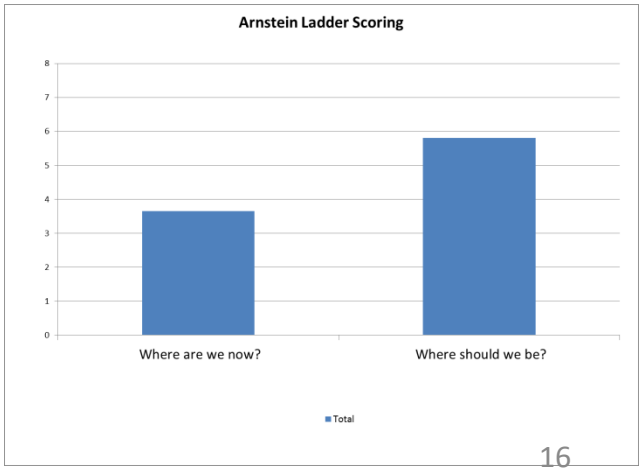


Focus Group Meetings

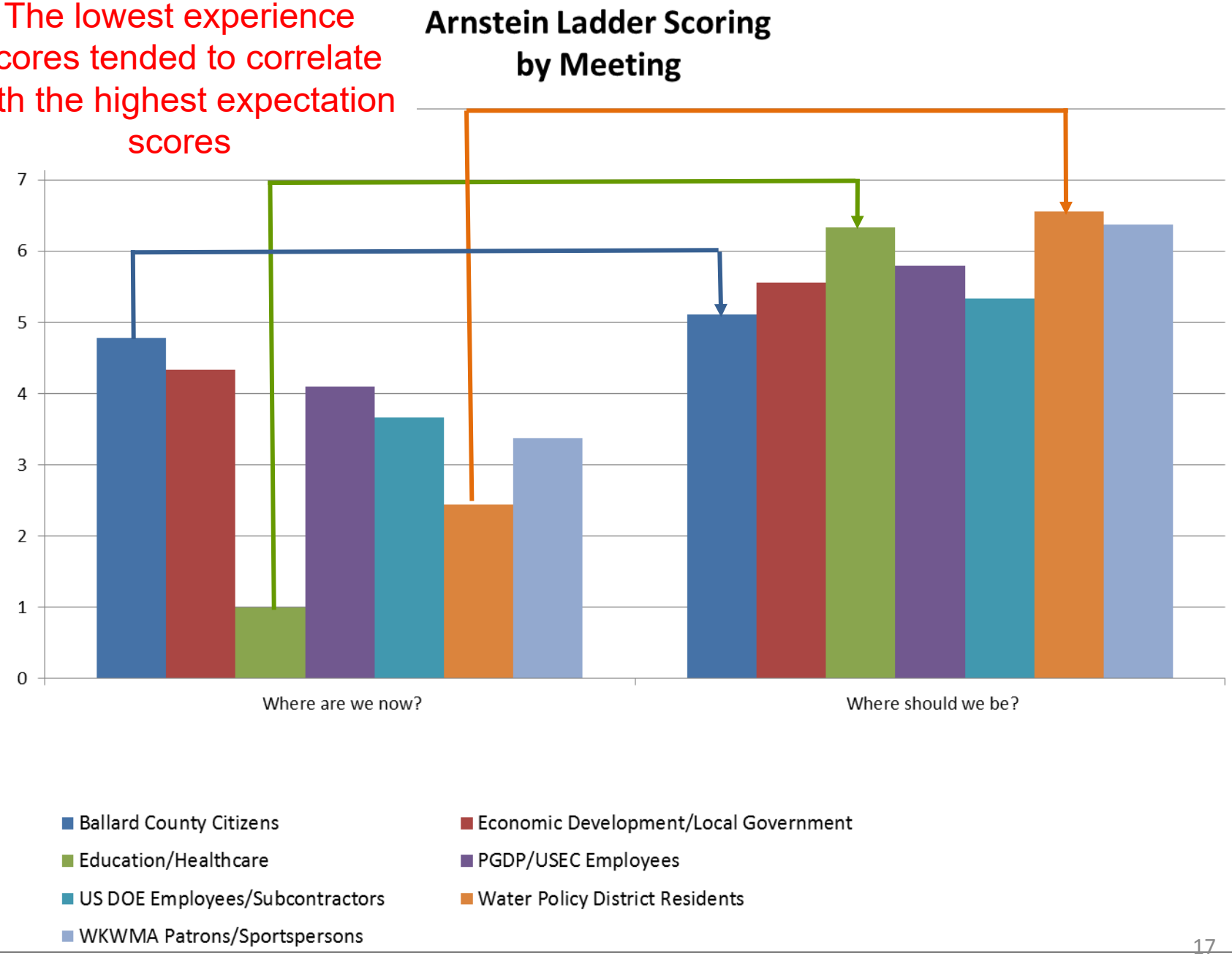
- Informed Consent
- Project Overview
- Introductions
- Arnstein Ladder
- Values Exercises
- Scenarios
  - Small Groups Discussions
  - Presentations
  - Large Group Discussion
  - Keypad Evaluations
- Information Needs/Credible Sources
- Process Evaluation



64 participants



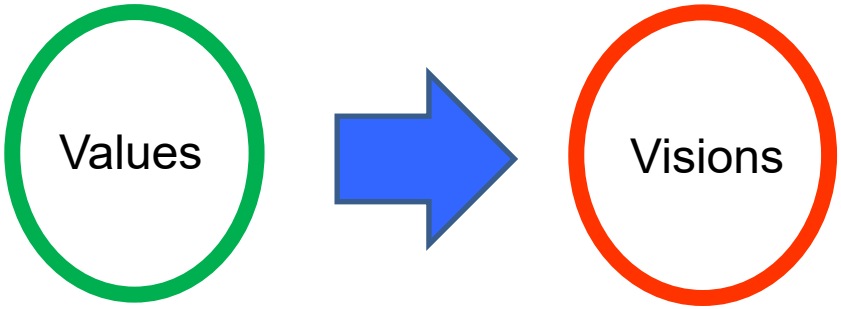
The lowest experience scores tended to correlate with the highest expectation scores



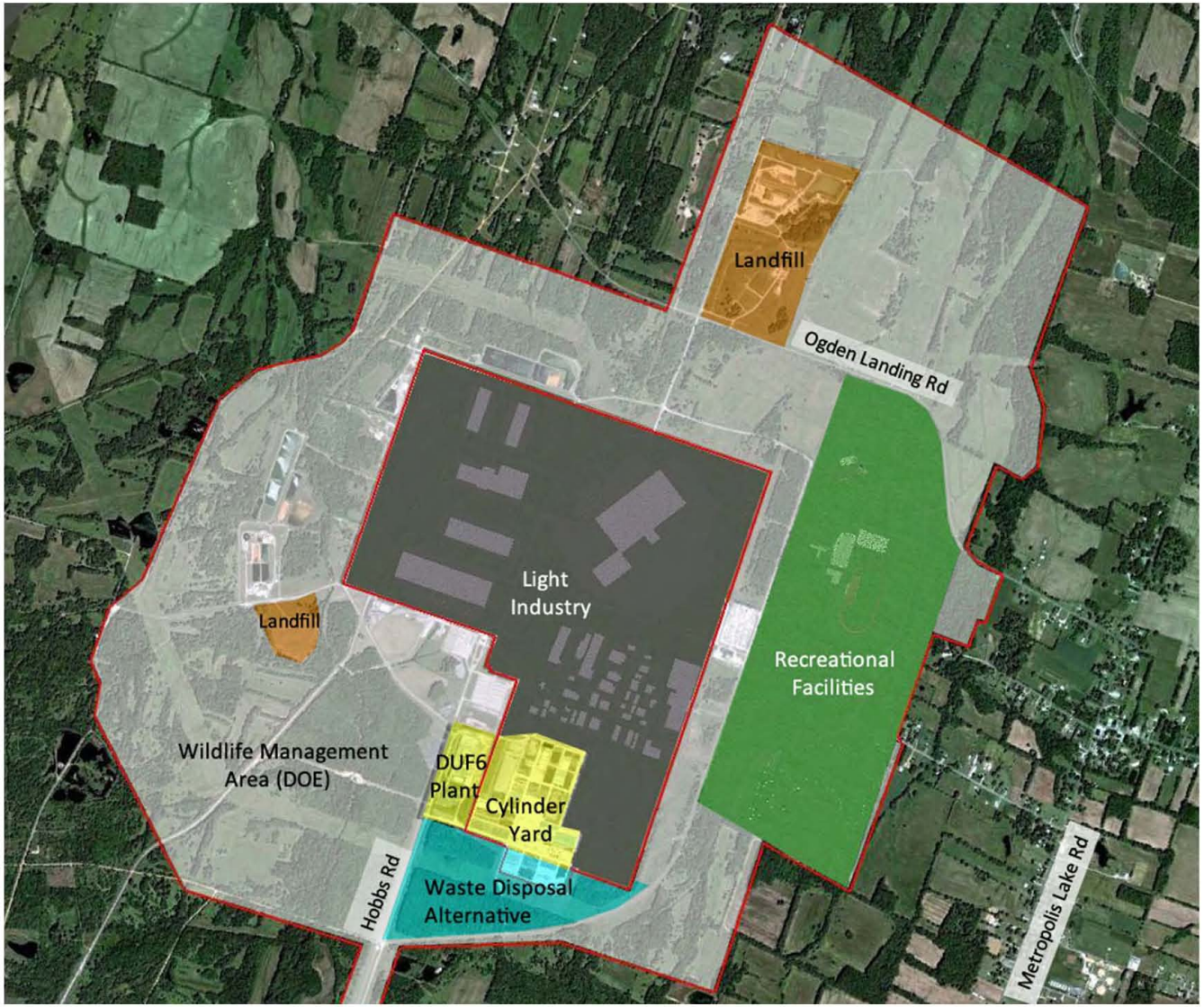
Value Exercises

- Appealing characteristics of the local community
  - Sense of community/community spirit
  - Heritage/tradition/family/“roots”
  - Friendliness
  - Outdoor recreation
  - Rural lifestyle with proximity to urban areas
  - Scenic beauty
  - Safety
  - Cultural/arts opportunities
- Characteristics of the ideal city
  - Jobs and economic opportunities
  - Clean environment
  - Safety
  - Kid-friendly
  - Scenic beauty
  - Education
  - Affordability

Values were used to evaluate hypothetical future visions (i.e. scenarios)



Computer visualizations such as the one below created with Google Earth Pro, Google Sketchup, and PixelActive's CityScape, Unity3D Gaming Engine



Scenario 5

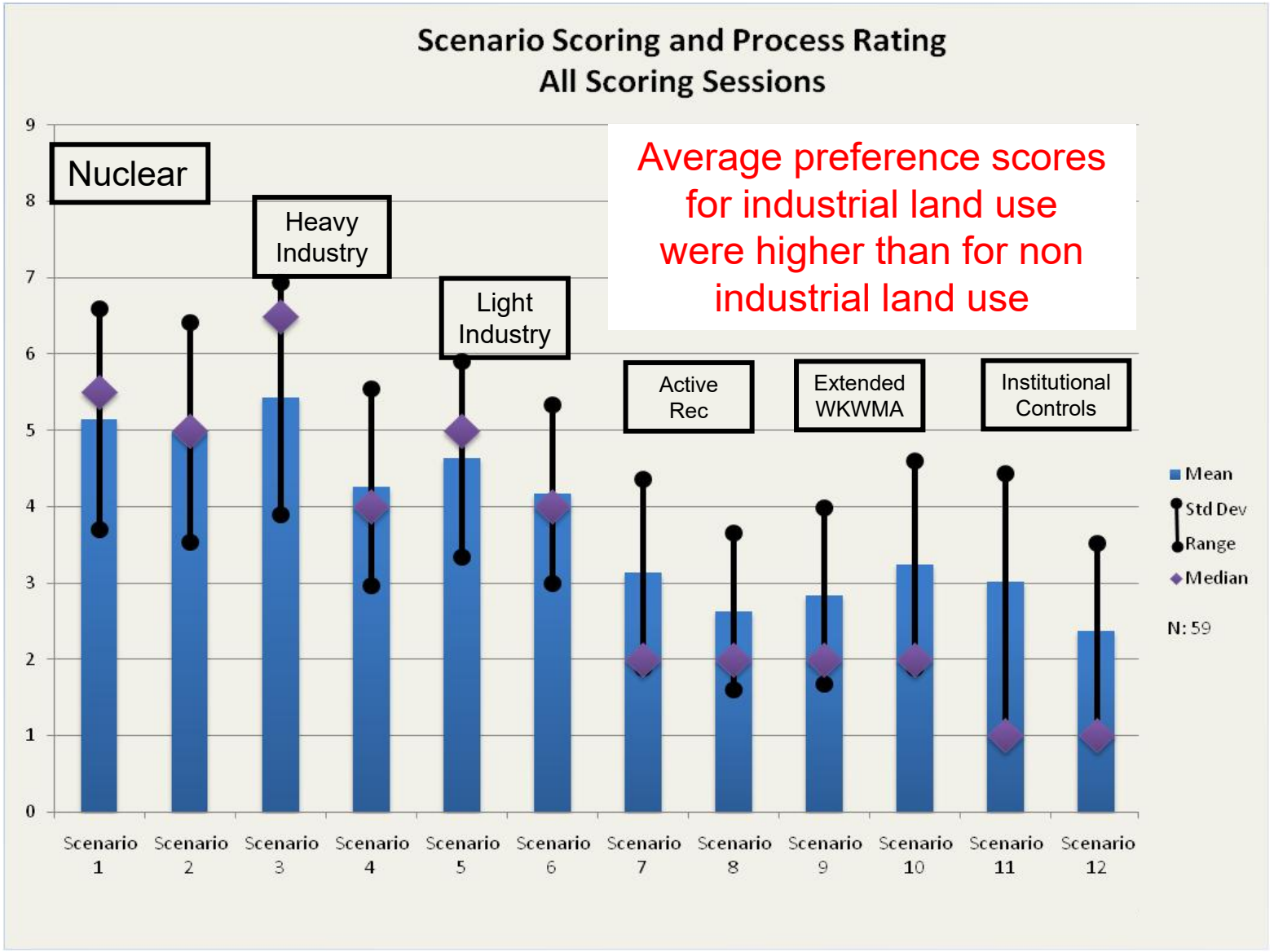
*Light Industry on Plant Site

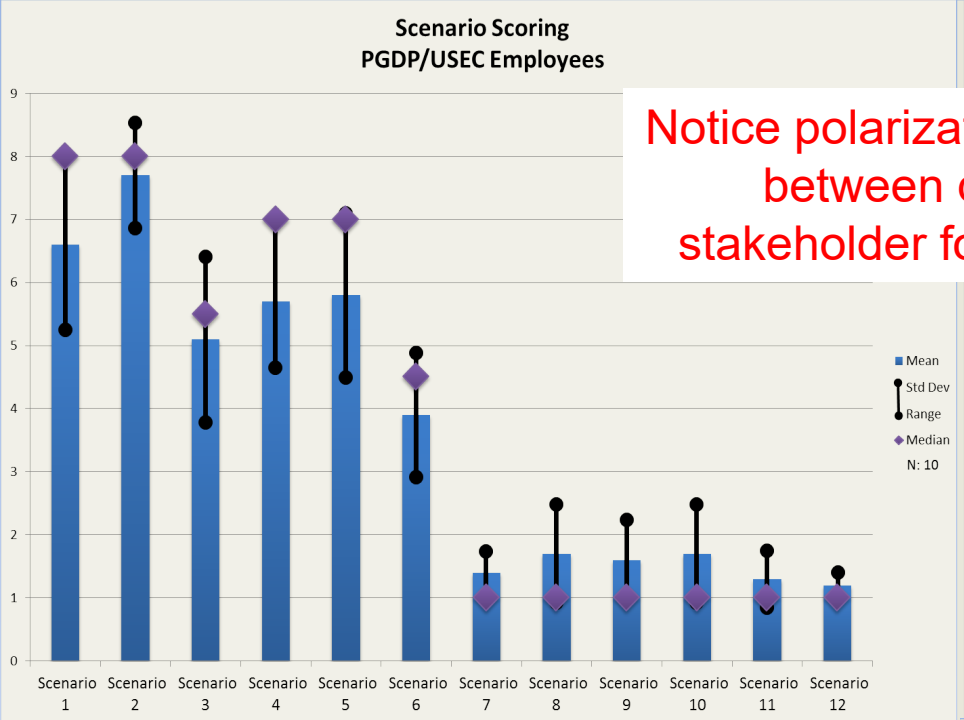
* Active Recreational Facilities added to PGDP WMA

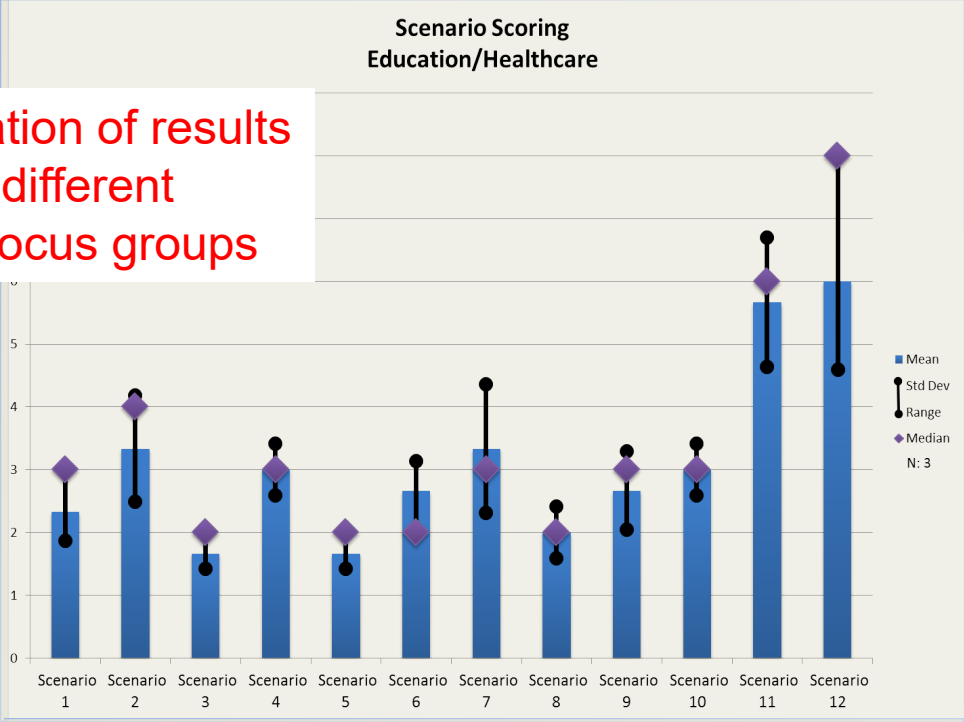
* Part of Plant Decommissioning Waste kept onsite in WDA and part placed in managed Landfill

* All Existing Burial Grounds excavated, some placed in the WDA and the rest shipped off-site.

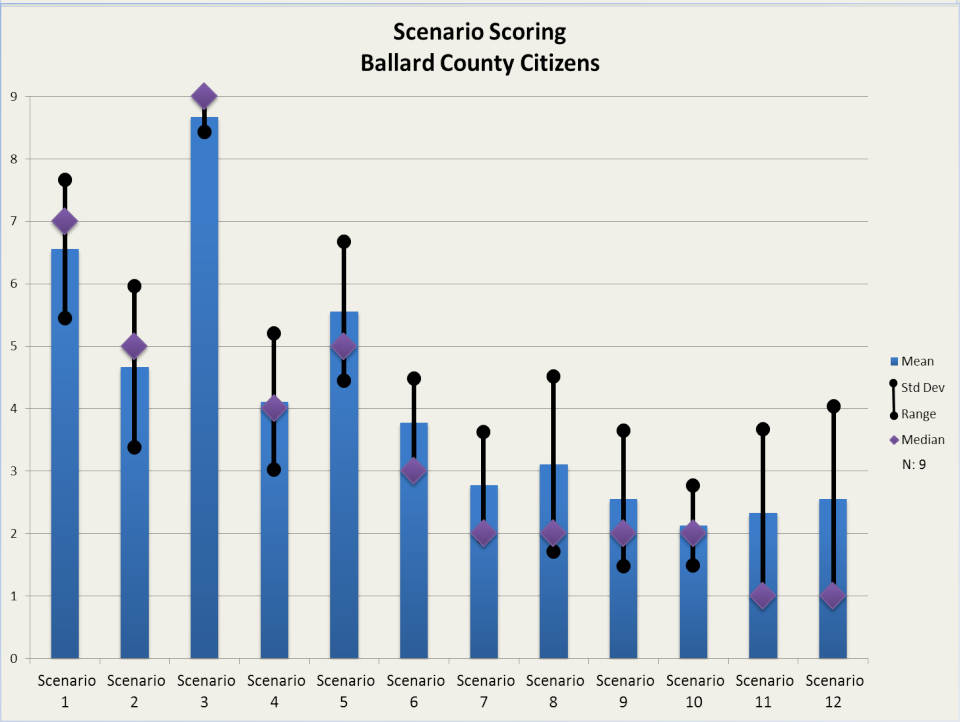
Summary of Focus Group Scoring

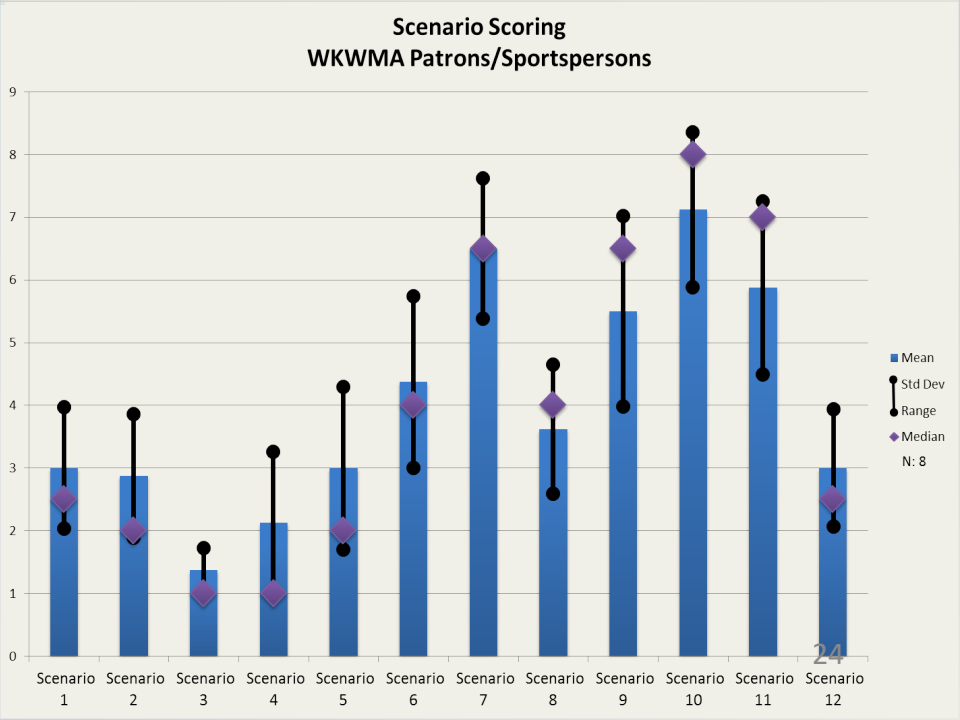


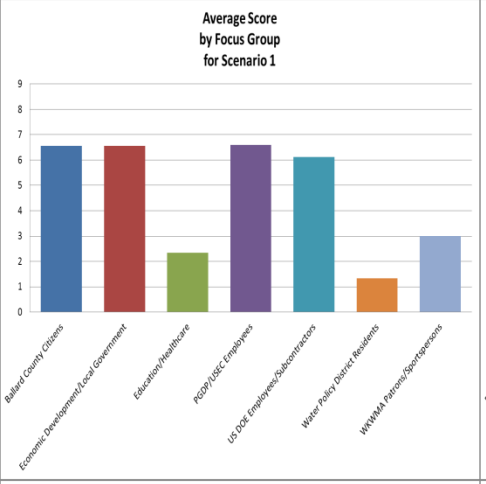


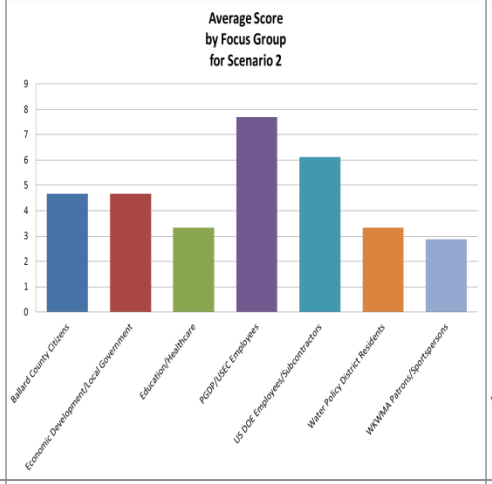


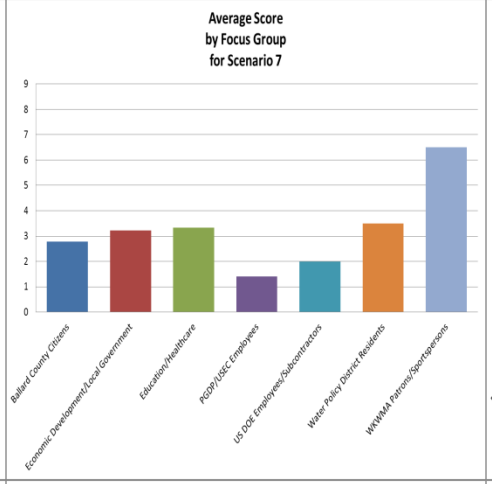
Notice polarization of results between different stakeholder focus groups

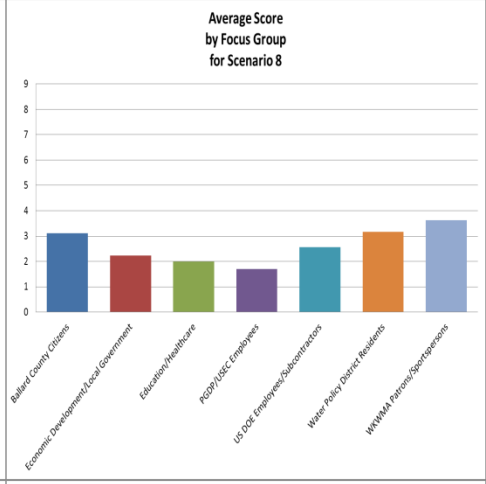


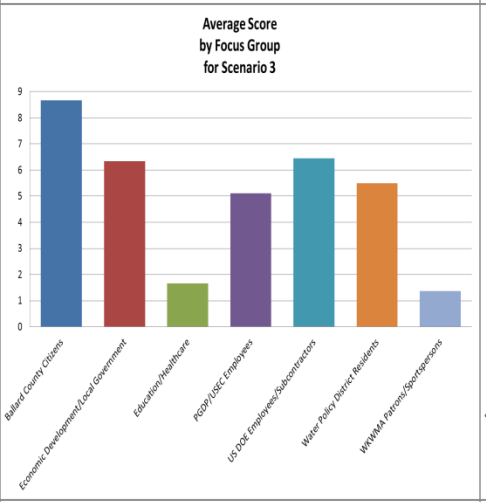


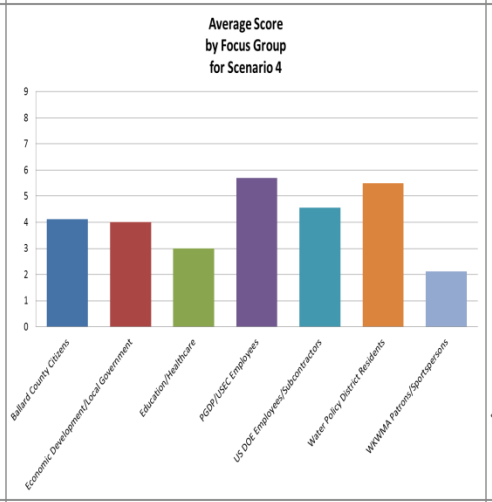

Average Score
by Focus Group
for Scenario 1
Ballard County Citizens
Economic Development/Local Government
Education/Healthcare
PGDP/USEC Employees
US DOE Employees/Subcontractors
Water Policy District Residents
WKWMA Patrons/Sportspersons

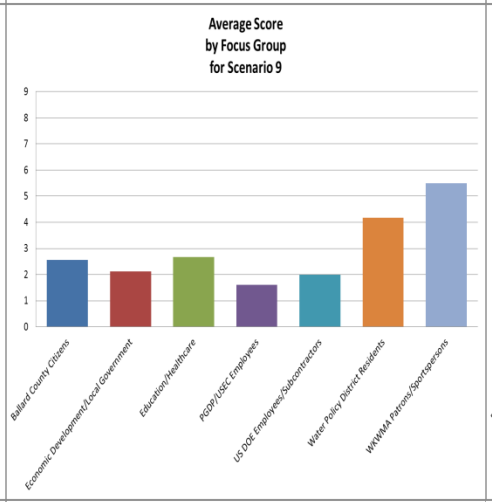

Average Score
by Focus Group
for Scenario 2
Ballard County Citizens
Economic Development/Local Government
Education/Healthcare
PGDP/USEC Employees
US DOE Employees/Subcontractors
Water Policy District Residents
WKWMA Patrons/Sportspersons

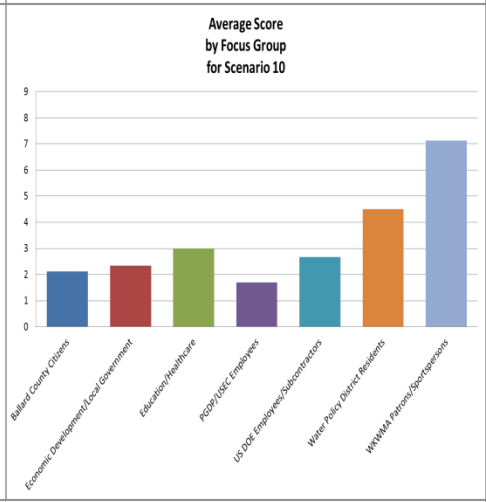

Average Score
by Focus Group
for Scenario 7
Ballard County Citizens
Economic Development/Local Government
Education/Healthcare
PGDP/USEC Employees
US DOE Employees/Subcontractors
Water Policy District Residents
WKWMA Patrons/Sportspersons

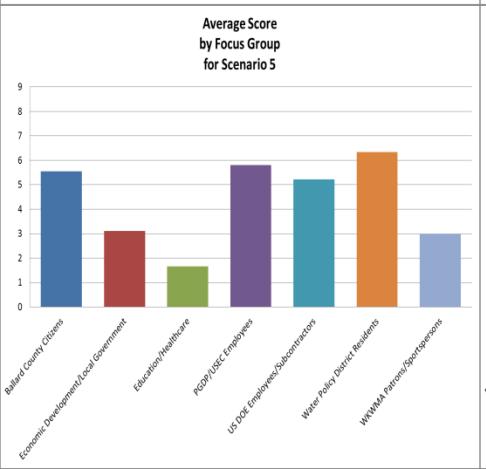

Average Score
by Focus Group
for Scenario 8
Ballard County Citizens
Economic Development/Local Government
Education/Healthcare
PGDP/USEC Employees
US DOE Employees/Subcontractors
Water Policy District Residents
WKWMA Patrons/Sportspersons

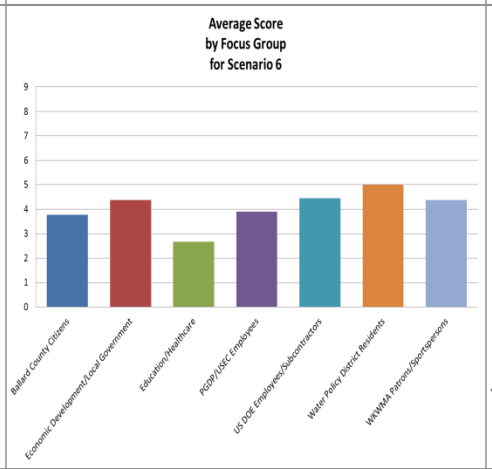

Average Score
by Focus Group
for Scenario 3
Ballard County Citizens
Economic Development/Local Government
Education/Healthcare
PGDP/USEC Employees
US DOE Employees/Subcontractors
Water Policy District Residents
WKWMA Patrons/Sportspersons

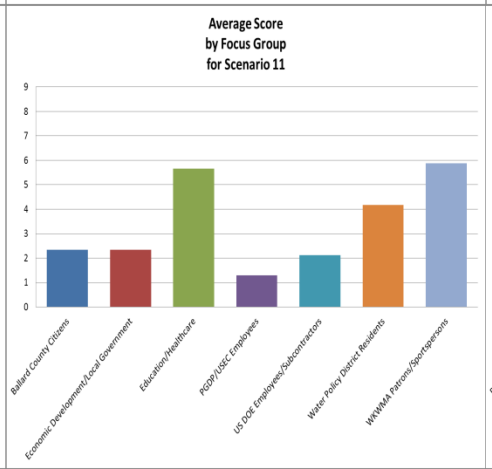

Average Score
by Focus Group
for Scenario 4
Ballard County Citizens
Economic Development/Local Government
Education/Healthcare
PGDP/USEC Employees
US DOE Employees/Subcontractors
Water Policy District Residents
WKWMA Patrons/Sportspersons

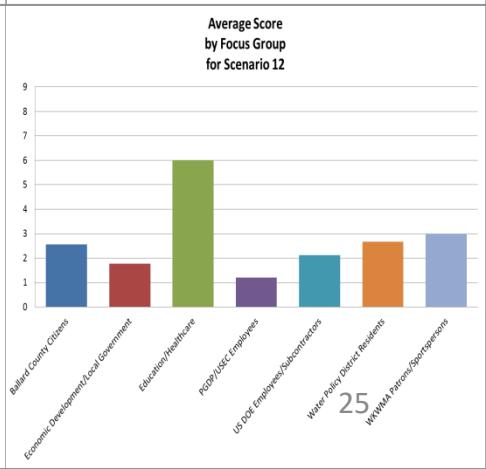

Average Score
by Focus Group
for Scenario 9
Ballard County Citizens
Economic Development/Local Government
Education/Healthcare
PGDP/USEC Employees
US DOE Employees/Subcontractors
Water Policy District Residents
WKWMA Patrons/Sportspersons


Average Score
by Focus Group
for Scenario 10
Ballard County Citizens
Economic Development/Local Government
Education/Healthcare
PGDP/USEC Employees
US DOE Employees/Subcontractors
Water Policy District Residents
WKWMA Patrons/Sportspersons

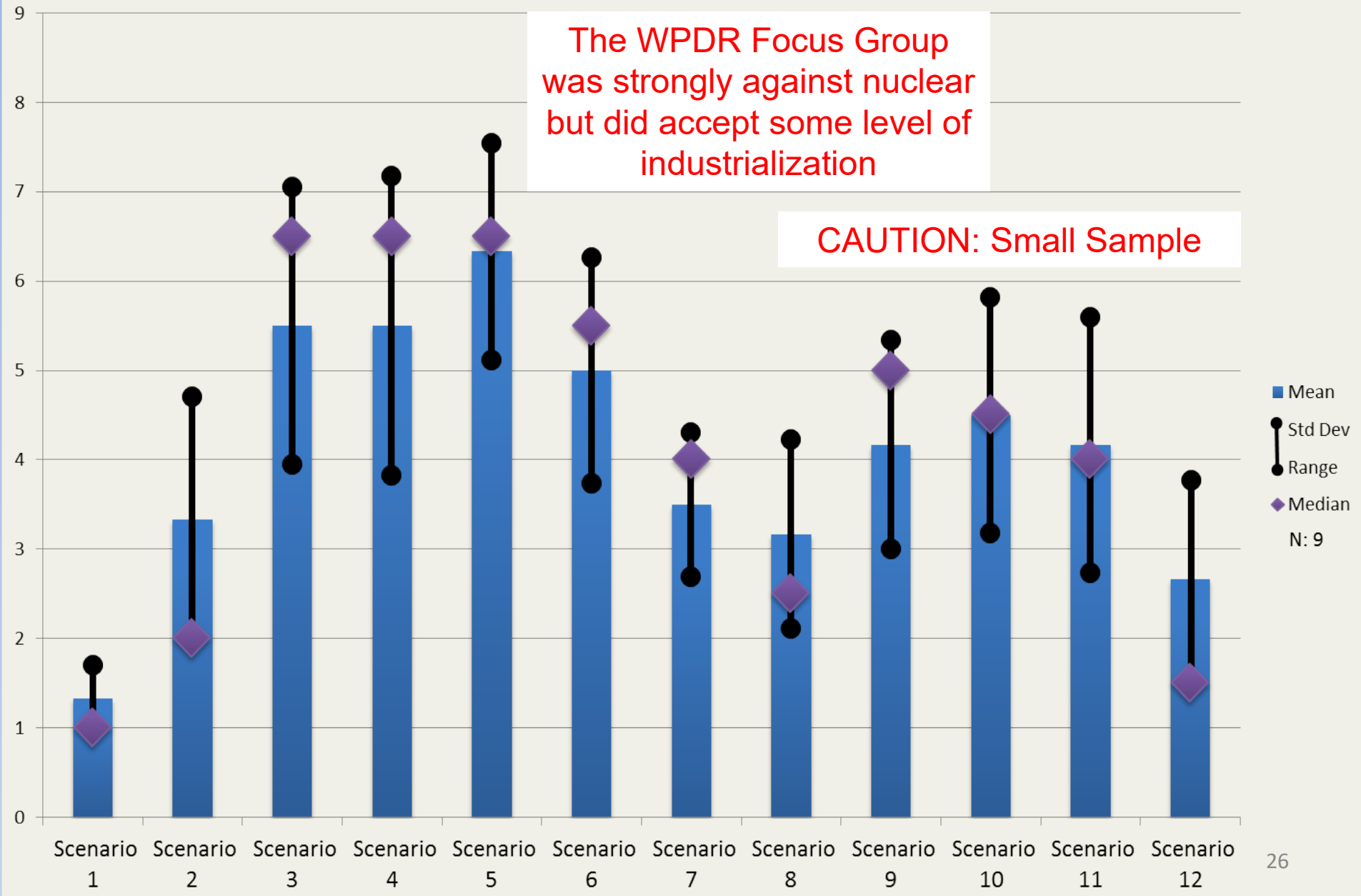

Average Score
by Focus Group
for Scenario 5
Ballard County Citizens
Economic Development/Local Government
Education/Healthcare
PGDP/USEC Employees
US DOE Employees/Subcontractors
Water Policy District Residents
WKWMA Patrons/Sportspersons


Average Score
by Focus Group
for Scenario 6
Ballard County Citizens
Economic Development/Local Government
Education/Healthcare
PGDP/USEC Employees
US DOE Employees/Subcontractors
Water Policy District Residents
WKWMA Patrons/Sportspersons


Average Score
by Focus Group
for Scenario 11
Ballard County Citizens
Economic Development/Local Government
Education/Healthcare
PGDP/USEC Employees
US DOE Employees/Subcontractors
Water Policy District Residents
WKWMA Patrons/Sportspersons


Average Score
by Focus Group
for Scenario 12
Ballard County Citizens
Economic Development/Local Government
Education/Healthcare
PGDP/USEC Employees
US DOE Employees/Subcontractors
Water Policy District Residents
WKWMA Patrons/Sportspersons

Scenario Scoring
Water Policy District Residents



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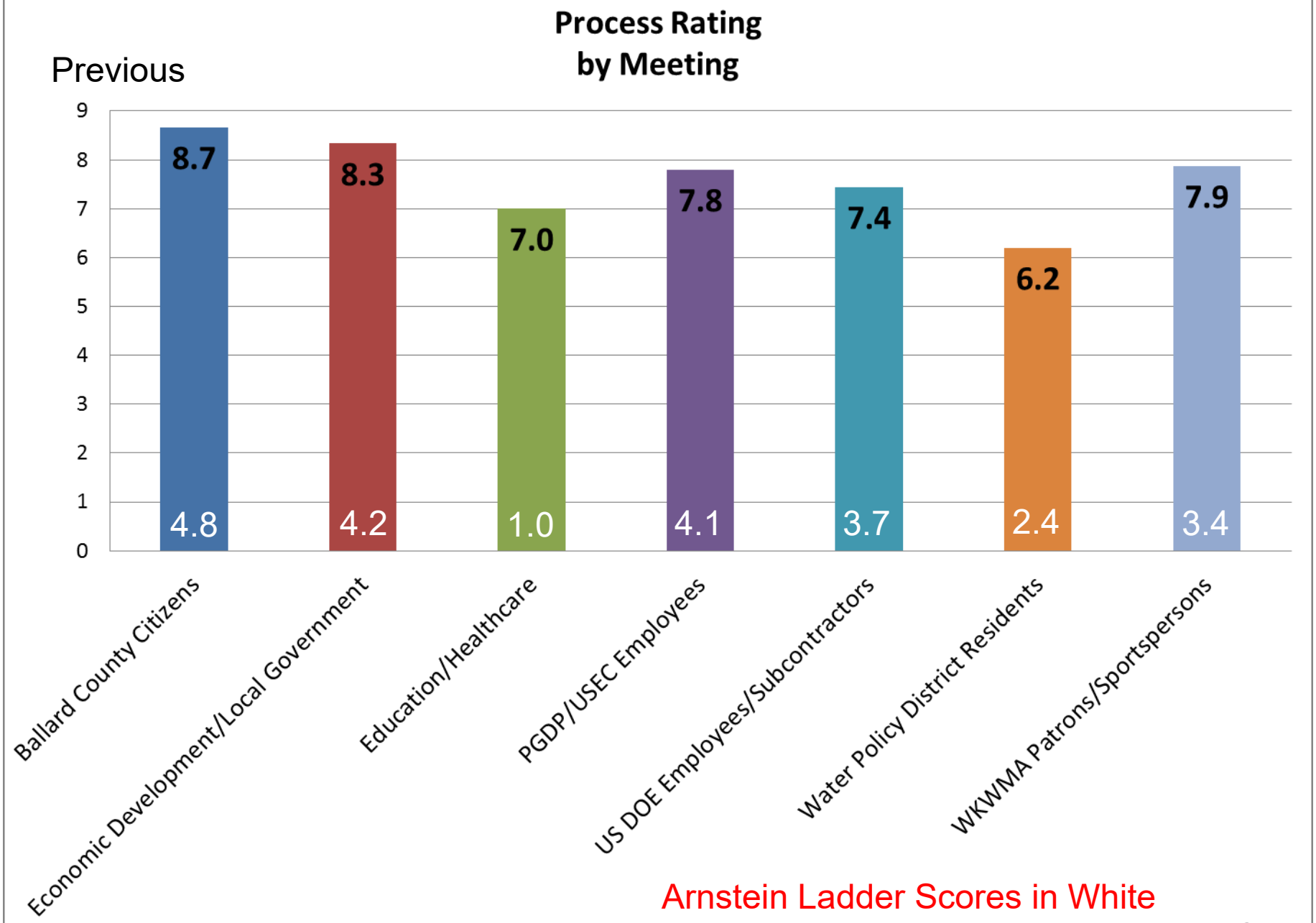
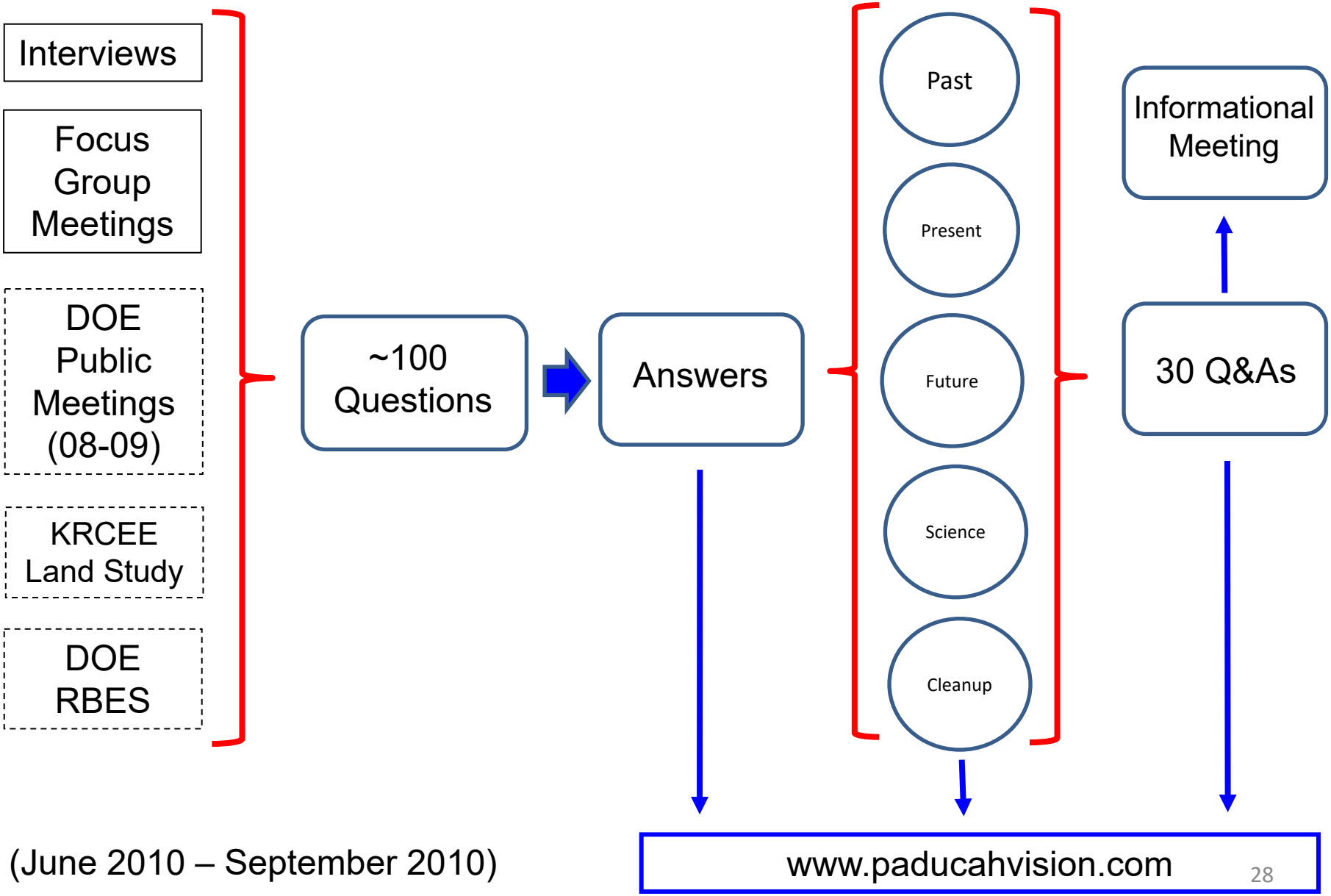


Arnstein Ladder Scores in White

Informational Needs



(June 2010 – September 2010)

paducahvision.com

Paducah's Future Visior

Welcome | The Project | The Past | The Present | The Future | Science | Cleanup | FAQ

Welcome

Project History

In 2003, the Kentucky Research Consortium for Energy and Environment (KRCEE) was created at the University of Kentucky. The Consortium's mission is to provide technical support to the US Department of Energy (US DOE), the US Environmental Protection Agency (US EPA), and the Kentucky Division of Waste Management regarding non-consensus issues associated with clean-up efforts at the Paducah Gaseous Diffusion Plant (PGDP), a National Priority List (NPL) Superfund site.

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Public Meetings Promotion

September 23, 2010 – October 12, 2010

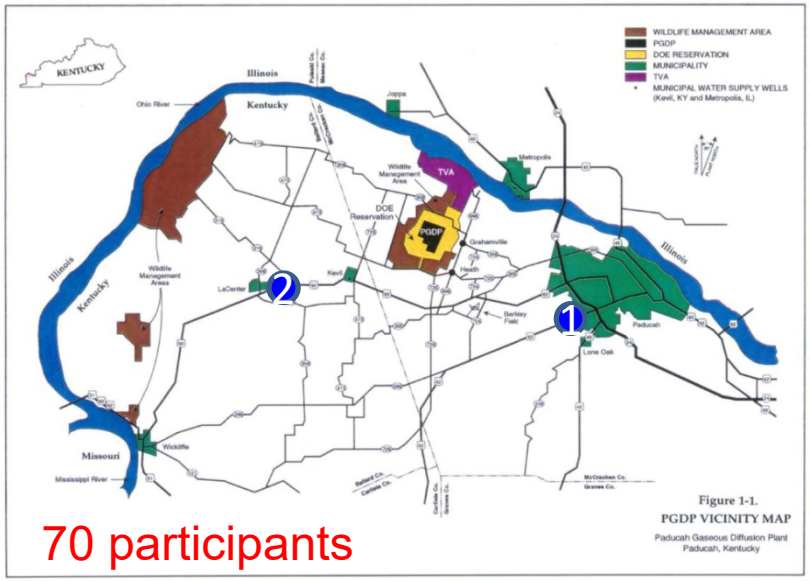
- *Paducah Sun BBQ on the River Guide* (Circulation: ~38,000): Quarter-page ad
- *Paducah Sun* (Circulation: ~25,000)
  - Public Information Meetings
    - 5 Quarter-Page Ads (10/4 – 10/12/2010)
    - Tuesday, October 12 (Feature story)
  - Scenario Meetings
    - 5 Quarter-Page Ads (10/19 – 10/25/2010)
    - Sunday, October 26 (Feature story)
    - Sunday, October 31 (Editorial)
- *Advance Yeoman* (Weekly, Circulation: ~1400):
  - Public Information Meetings
    - 1 Quarter-Page Ad (Week of 10/03/2010)
  - Scenario Meetings
    - 1 Quarter-Page Ad (Week of 10/17/2010)
- *West Kentucky News* (Circulation ~16,000): Quarter-Page Ads
  - Public Information Meetings
    - 1 Quarter-Page Ad (Week of 10/3/2010)
  - Scenario Meetings
    - 1 Quarter-Page Ad (Week of 10/17/2010)
- *Ballard Weekly* (Circulation: ~700)
  - –Public Information Meetings
    - –1 Half-Page Ad (10/5/2010)
  - –Scenario Meetings
    - –1 Half-Page Ad 10/19/2010)
- WPSD Local 6
  - –Interview (10/11/2010)

- Meeting announcements and flyers sent to all residents of the Water Policy Area
- Meeting announcements and flyers sent to 60-person stakeholder email list generated by the research team throughout the project
- Announcements and flyers posted to iList Paducah and local radio and television websites. Press releases sent to University of Kentucky Public Relations west Kentucky mailing list.

STEP THREE: Public Informational Meetings

May 6, 2010 – October 12, 2010

- Set ground rules
- Audience self selects membership on a team (favorite season)
- Audience selects category order
- Present questions
  - 5 Categories of multiple choice questions
    - Past
    - Present
    - Future
    - Science
    - Cleanup
  - 6 Questions/category
- Audience votes on answers
- Reveal correct answers
- Provide an opportunity for questions and/or discussion

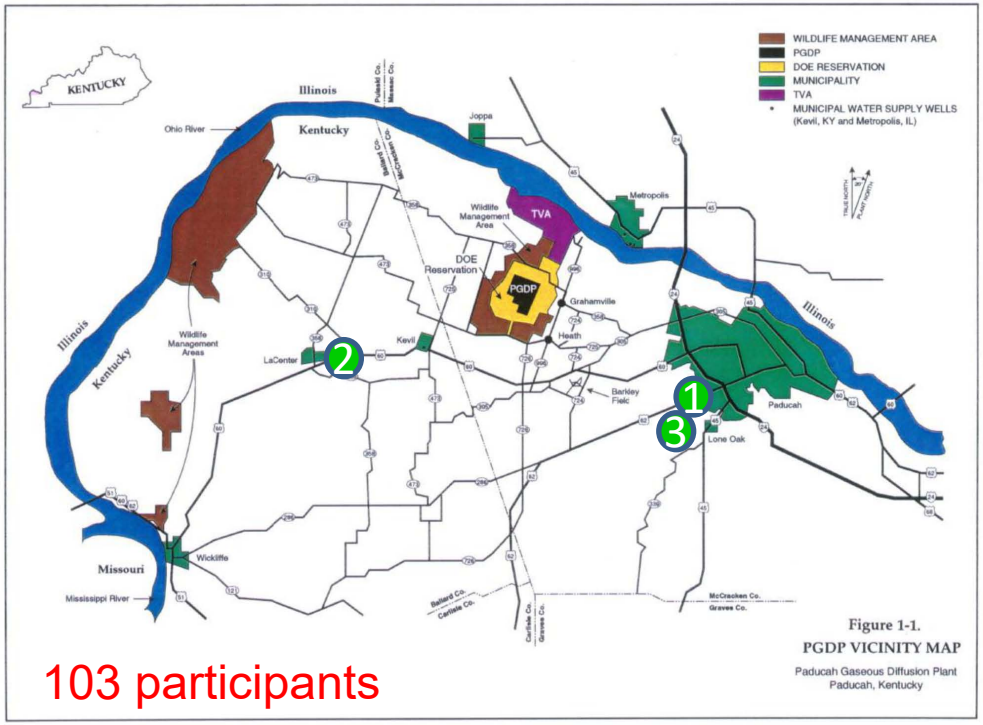


70 participants

STEP FOUR: Public Scenario Scoring Meetings

October 25, 2010 – October 27, 2010

- Set ground rules
- Present each of the 12 scenarios
- Field questions about scenarios
- Vote on each scenario
- Solicit additional scenarios from audience
- Vote on audience-generated scenarios
- Evaluate the process



103 participants

Structured Public Involvement (SPI)

Welcome
Introduction
Ground rules

12 Scenarios

Presentation

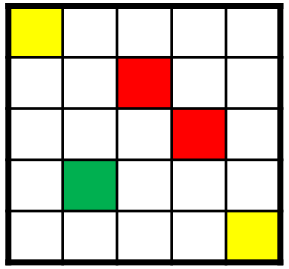
Facilitated Discussion

Future State Visualizations

12 Scenarios

Selection

Vote on Scenarios



Using Keypads

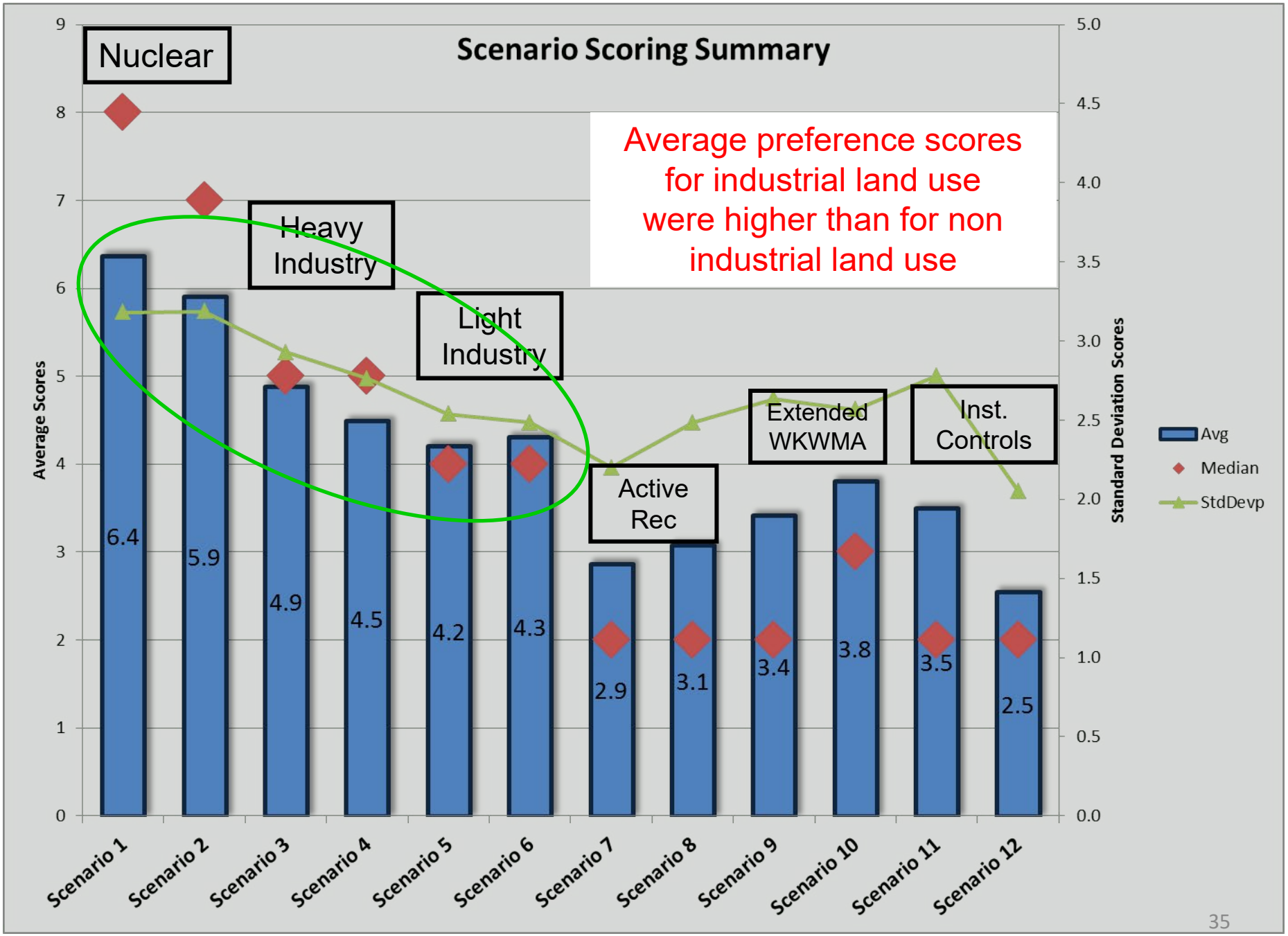
- **Chauffer** manages and operates equipment, enters comments solicited from participants
- **Emcee's** job is to enforce democratic process, keep process moving and on track
- **SME** interprets, aids understanding, helps avoid misinformation

Future Vision Scenarios

S#	PGDP Landuse						WMA Land Use		Future Waste Ship Off Site:			Legacy Waste Excavate:	
	NE	HI	LI	AR	PR	IC	Addl Rec	Exist	None	Part	All	All	Part
1	x							x	x			x	
2	x							x		x			x
3		x					x				x	x	
4		x						x	x				x
5			x				x			x		x	
6			x					x			x		x
7				x				x		x			x
8				x			x		x			x	
9					x		x				x		x
10					x			x		x		x	
11						x		x			x	x	
12						x	x		x				x

Industrial Land uses

Non Industrial Land uses


Scenario Scoring Summary
Nuclear
Heavy Industry
Light Industry
Active Rec
Extended WKWMA
Inst. Controls
Average preference scores for industrial land use were higher than for non industrial land use
Average Scores
Standard Deviation Scores
Avg
Median
StdDevp
6.4
5.9
4.9
4.5
4.2
4.3
2.9
3.1
3.4
3.8
3.5
2.5
Scenario 1
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Scenario 3
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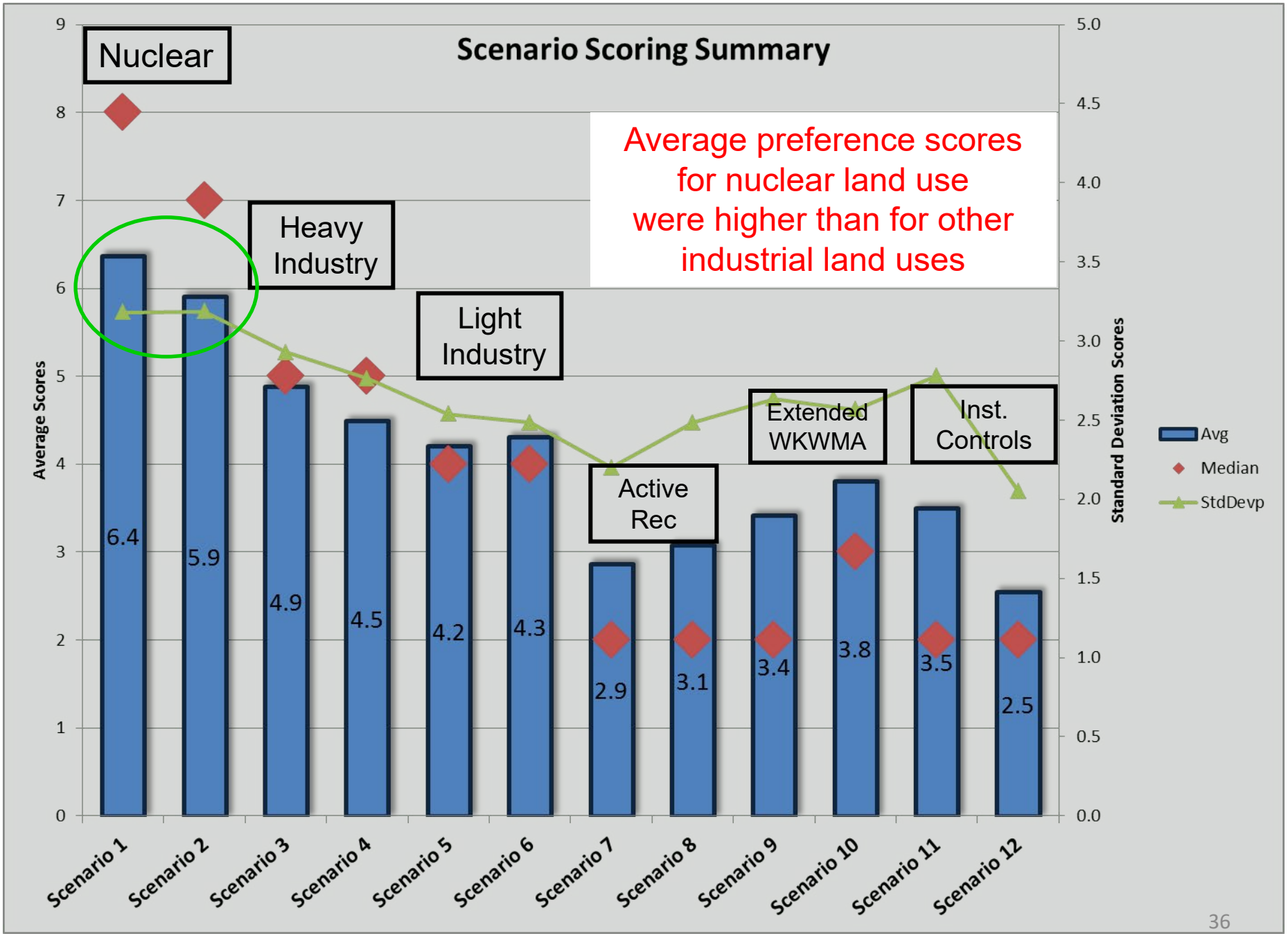
Scenario 9
Scenario 10
Scenario 11
Scenario 12


Scenario Scoring Summary
Nuclear
Heavy Industry
Light Industry
Active Rec
Extended WKWMA
Inst. Controls
Average preference scores for nuclear land use were higher than for other industrial land uses
Average Scores
Standard Deviation Scores
Avg
Median
StdDevp
6.4
5.9
4.9
4.5
4.2
4.3
2.9
3.1
3.4
3.8
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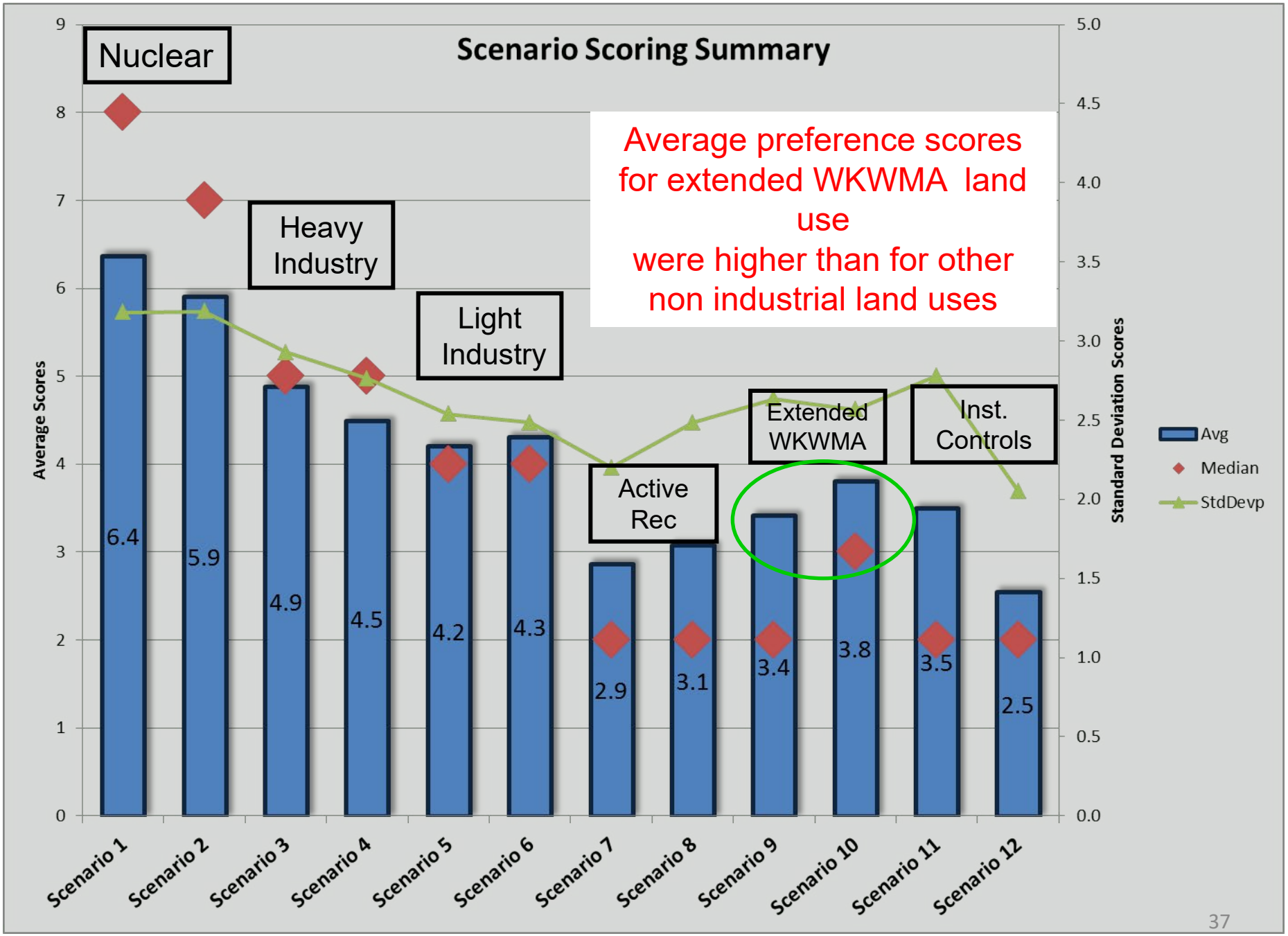
Scenario 11
Scenario 12


Scenario Scoring Summary
Nuclear
Heavy Industry
Light Industry
Active Rec
Extended WKWMA
Inst. Controls
Average preference scores for extended WKWMA land use were higher than for other non industrial land uses
Average Scores
Standard Deviation Scores
Avg
Median
StdDevp
6.4
5.9
4.9
4.5
4.2
4.3
2.9
3.1
3.4
3.8
3.5
2.5
Scenario 1
Scenario 2
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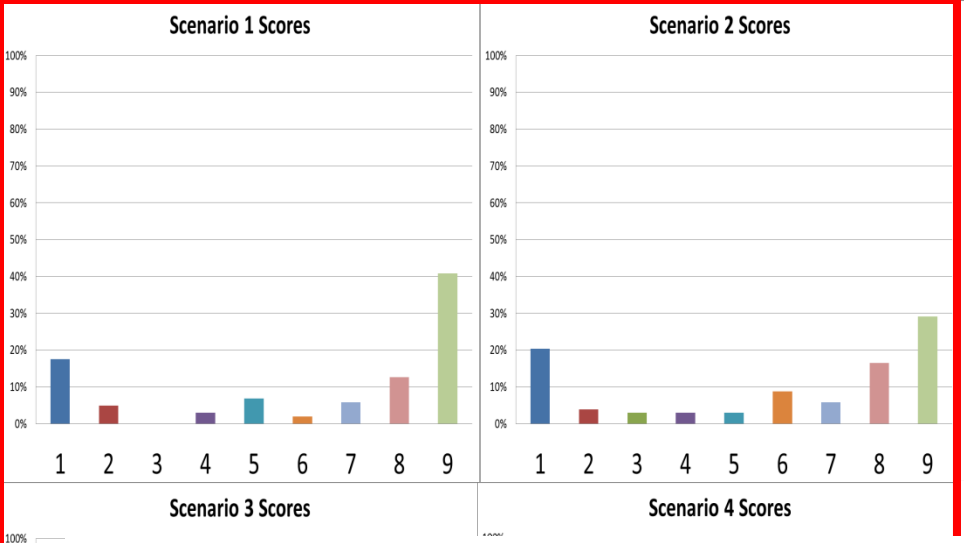
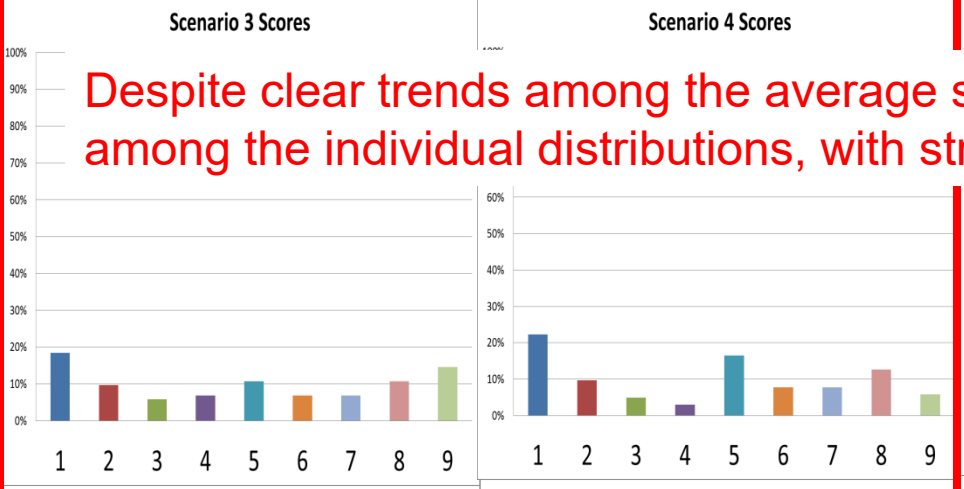
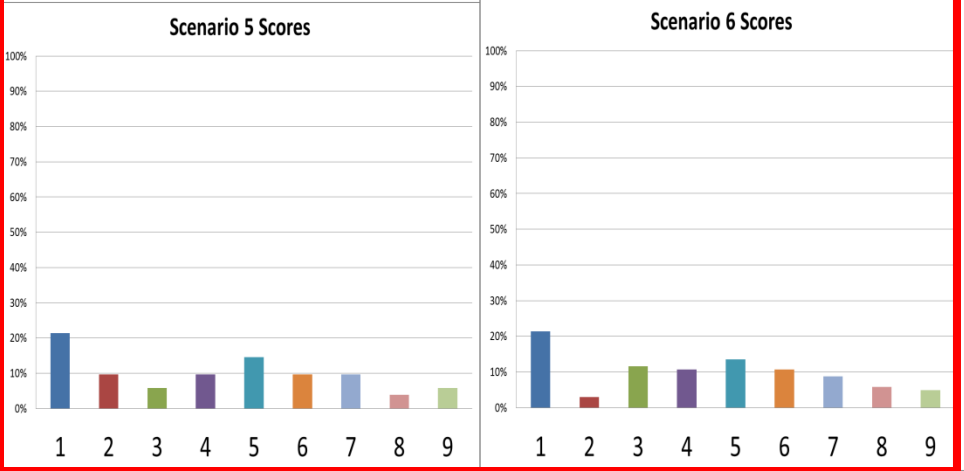
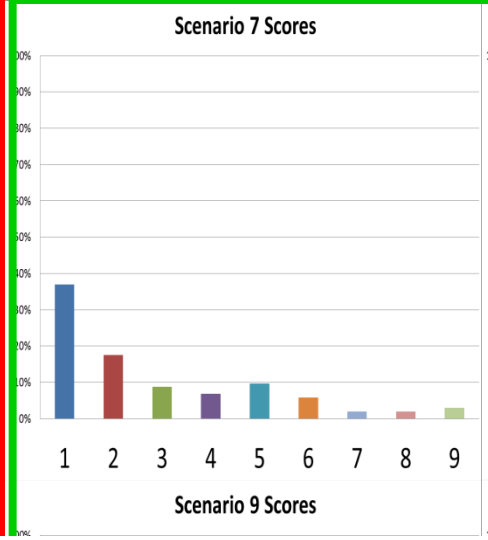
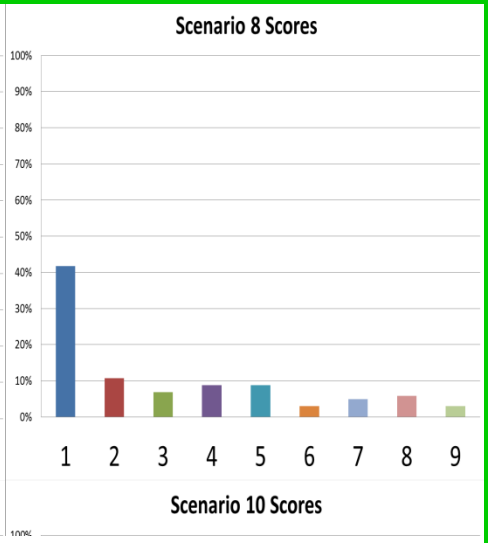
Scenario 11
Scenario 12

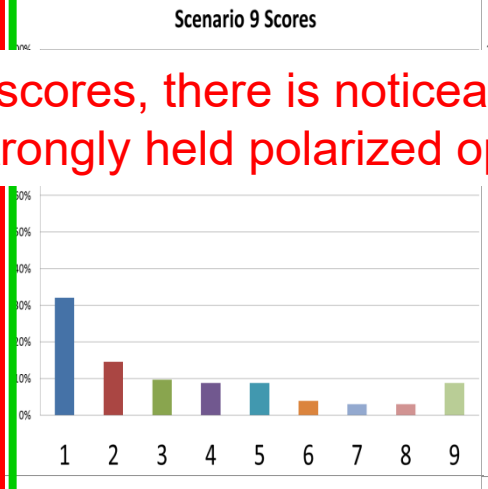


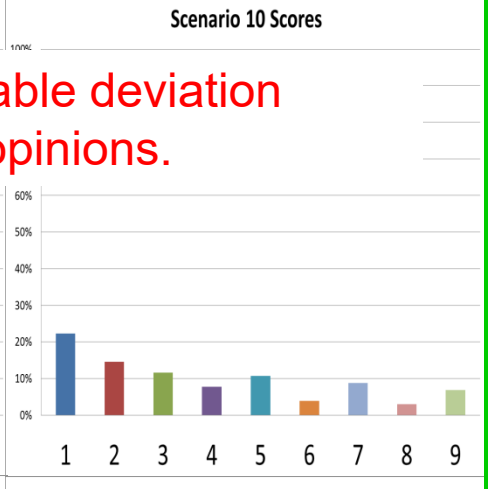


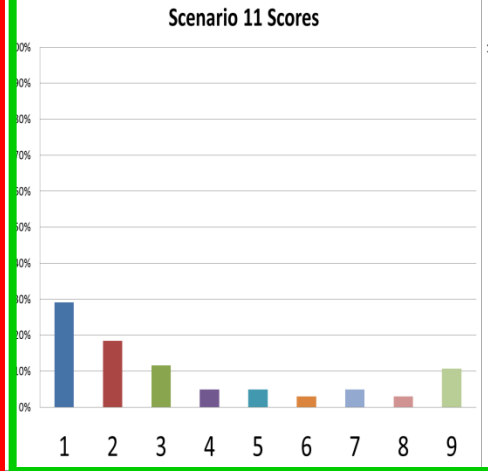


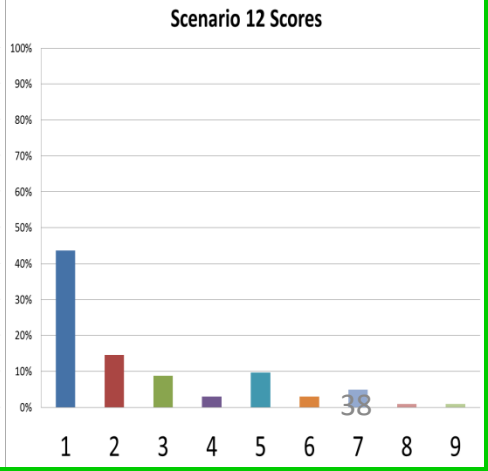




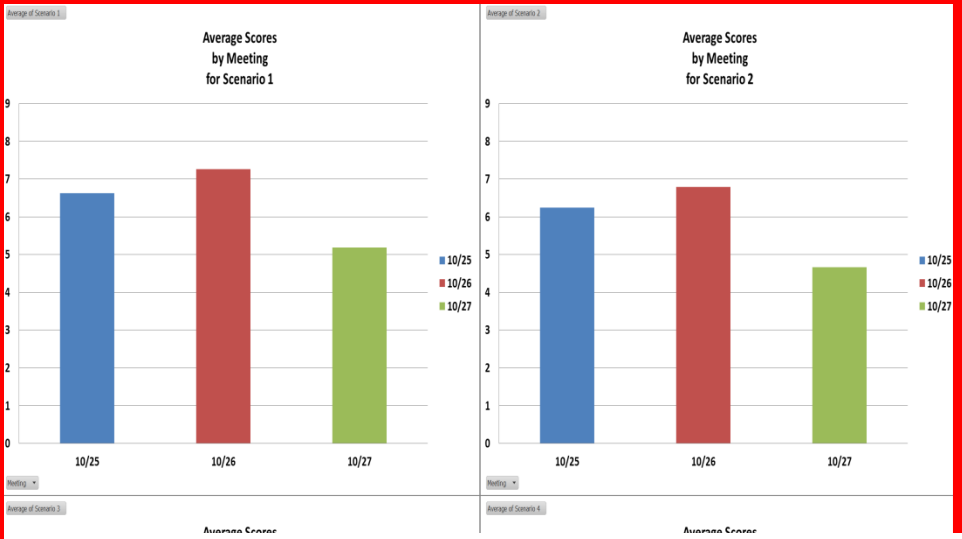


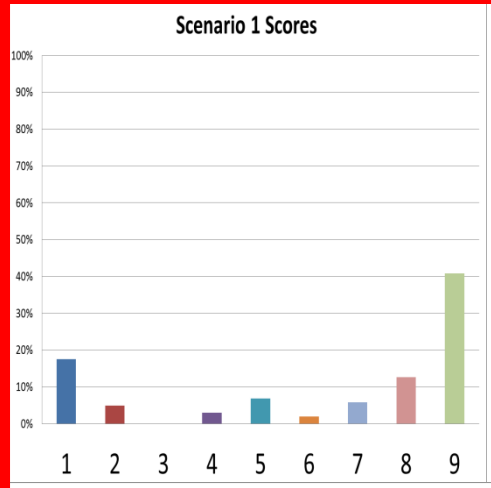


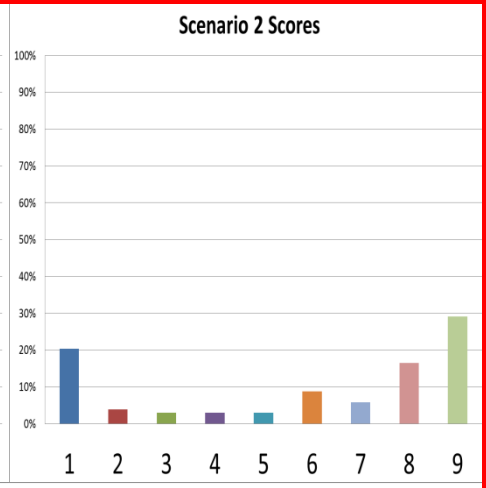


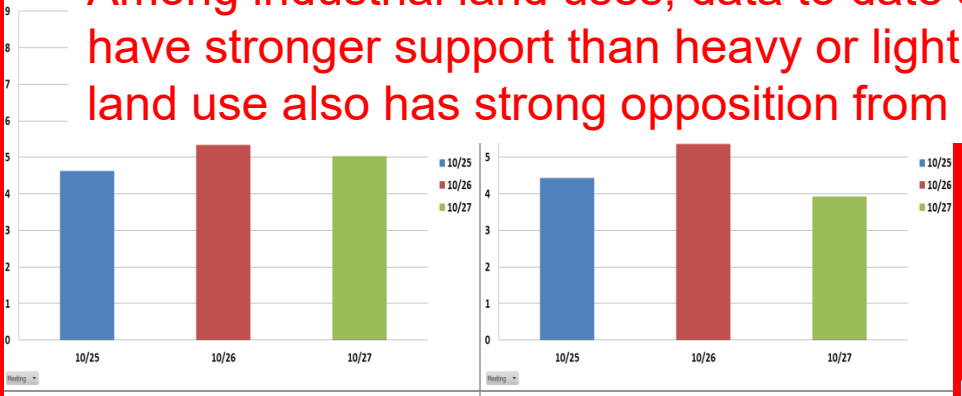


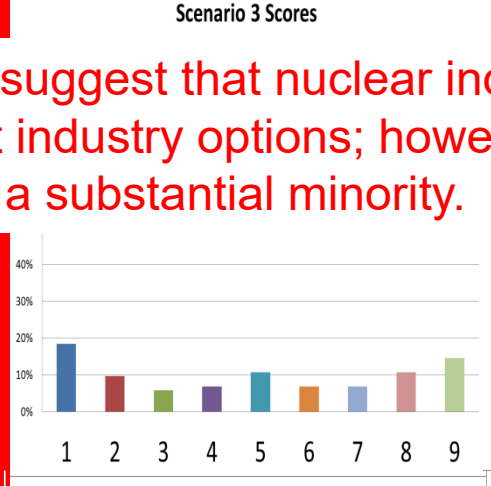
Despite clear trends among the average scores, there is noticeable deviation among the individual distributions, with strongly held polarized opinions.

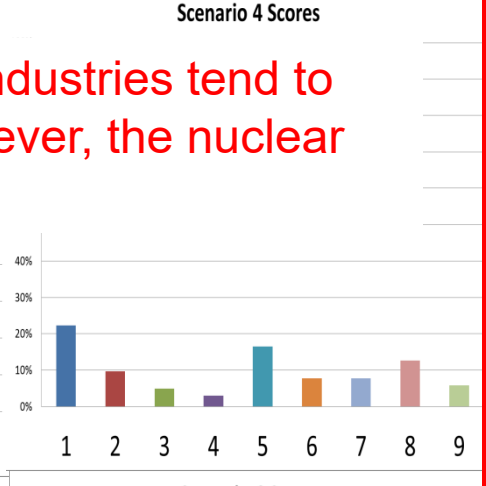




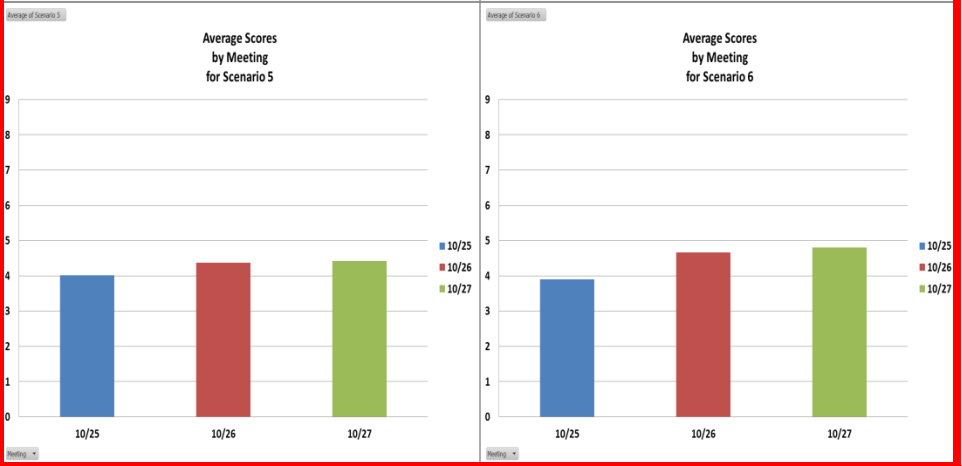


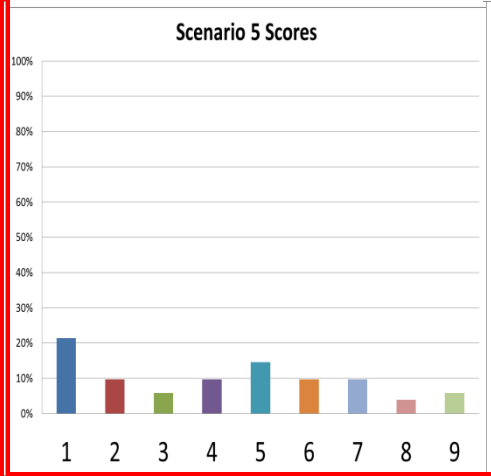


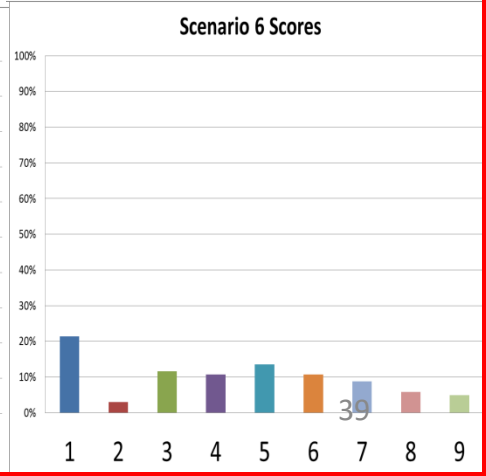




Among industrial land uses, data to date suggest that nuclear industries tend to have stronger support than heavy or light industry options; however, the nuclear land use also has strong opposition from a substantial minority.







Nuclear Industry Participant Discussion

Balancing Perceived Economic, Environmental, Health, & Seismic Risks

- "[O]ur community, we're already in the nuclear—we feel safe with it, you know?"
- "[This scenario represents] jobs in the area, and not only just jobs, but high technology jobs."
- "[T]he idea of nuclear power is appealing to me… I'm not really opposed to having that around us as long as…it can be made safe."
- "I like the idea of a nuclear power plant, using some alternative energy sources instead of coal…"
- "If it's safe, then I say yes it is a good future use..."
- "It would bring a lot of jobs into the community… But in the end…you've got potential environmental disaster [and] further contamination."

Nuclear Industry Participant Discussion

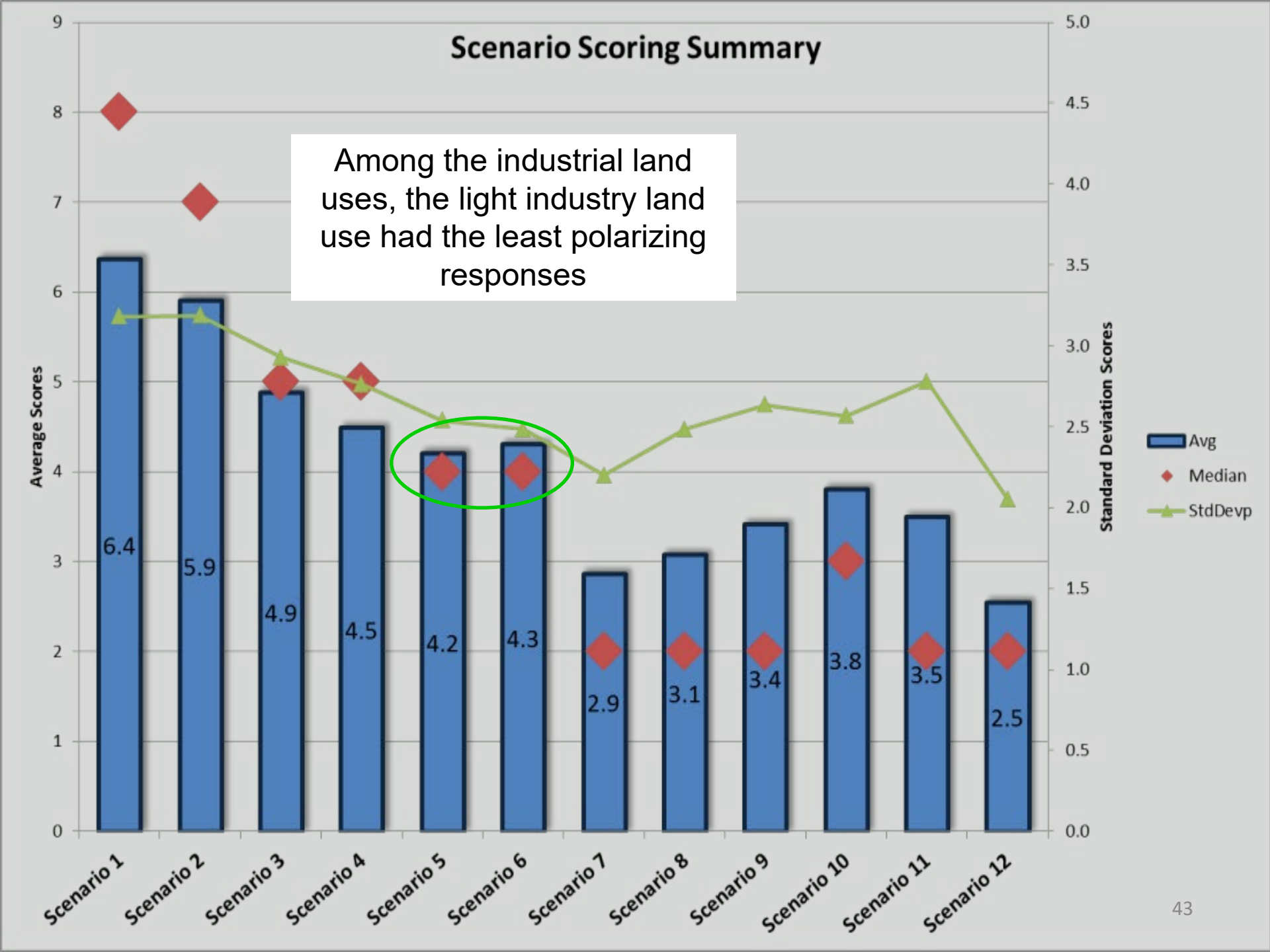
Balancing Perceived Economic, Environmental, Health, & Seismic Risks

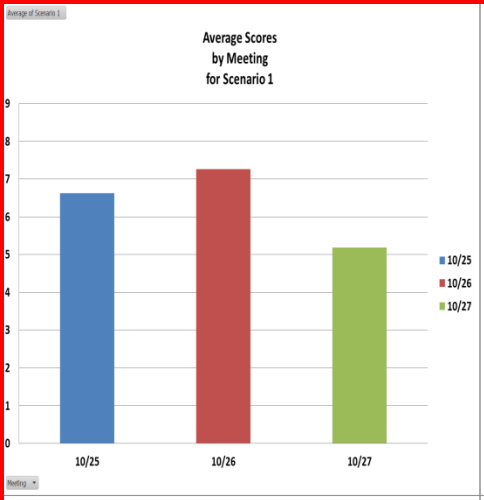
- "It would bring a lot of jobs into the community for years to come as this thing's being built. But in the end, due to the fact that it's a nuclear power plant, you've got potential environmental disaster [and] further contamination. So I guess that would be the good and the bad. In our personal opinion, the bad outweighs the good."
- "I don't want another Chernobyl."
- "When God built a nuclear reactor, he put it 63 million miles away. That's where they ought to be."
- "We're right on the border between the seismic zones nine and ten. I just think it's totally unrealistic…to think about putting a nuclear power plant out there on that contaminated site..."
- "This site...would have to be generating more waste, more radioactivity… We're right on the border between the seismic zones nine and ten. I just think it's totally unrealistic that when it comes down to it to think about putting a nuclear power plant out there on that contaminated site..."
- "I'm all for nuclear power as long as you do two things. One, get nuclear power that doesn't leave waste. And second is repeal Murphy's Law."

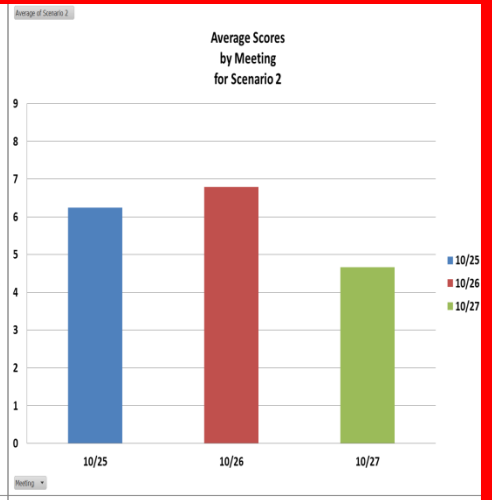
Heavy Industry Participant Discussion

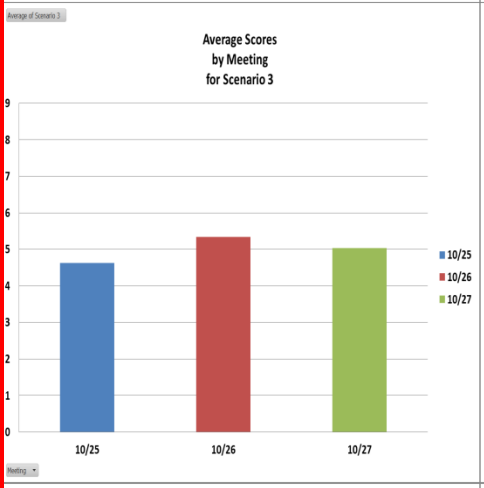
Weighing jobs, the environment, waste disposal, & perceptions

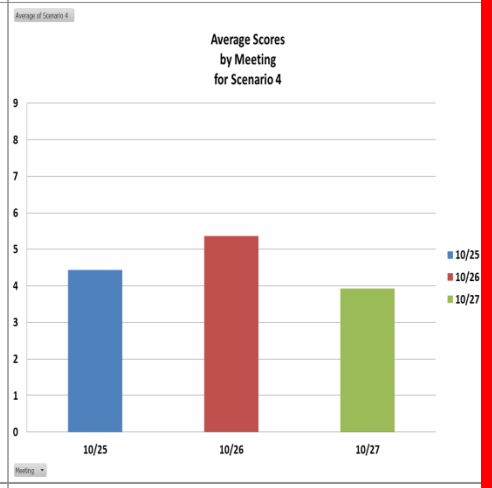
- "[R]eindustrialization will provide jobs."
- "We thought it was probably the most feasible thing you could do with the land."
- "We think it's probably a good idea, as long as the industry that it brings in doesn't damage the wildlife area anymore."
- "[Y]ou'd have a lot of jobs there, but you'd still have the same old problems we've always had."
- "[W]ho's going to want to build some sort of new plant or, you know, new entity next to a nuclear waste dump…?"
- "If they're scared to come in here and work because of past contamination, they're not going to come."
- "I just don't see how you're gonna convince [industry] that this is perfectly safe and, you know, we can build right next to this [WDA]. I think...it's gonna, basically, condemn the site for any future development."

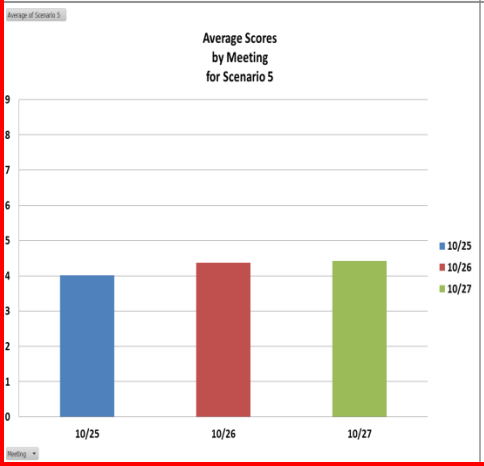

Scenario Scoring Summary
Among the industrial land uses, the light industry land use had the least polarizing responses
Average Scores
Standard Deviation Scores
Avg
Median
StdDevp
6.4
5.9
4.9
4.5
4.2
4.3
2.9
3.1
3.4
3.8
3.5
2.5
Scenario 1
Scenario 2
Scenario 3
Scenario 4
Scenario 5
Scenario 6
Scenario 7
Scenario 8
Scenario 9
Scenario 10
Scenario 11
Scenario 12

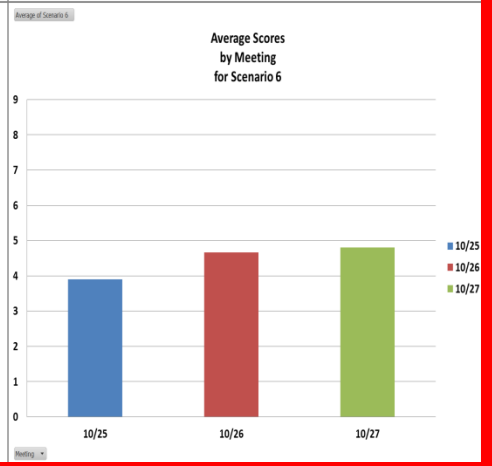

Average of Scenario 1
Average Scores
by Meeting
for Scenario 1
10/25
10/26
10/27
Meeting

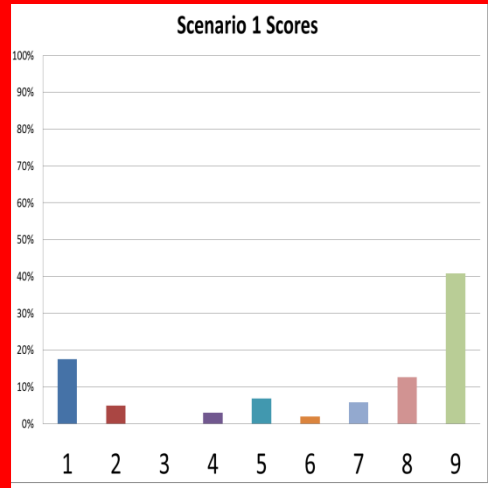

Average of Scenario 2
Average Scores
by Meeting
for Scenario 2
10/25
10/26
10/27
Meeting

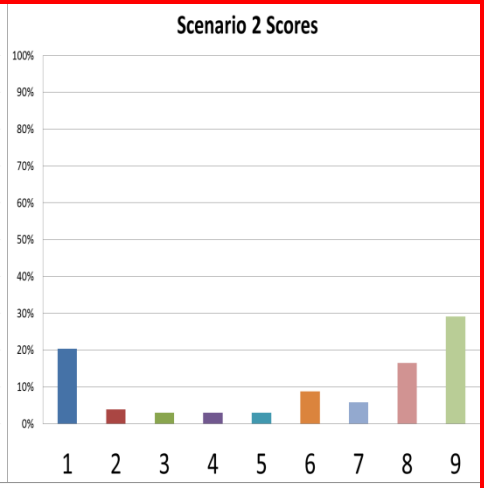

Average of Scenario 3
Average Scores
by Meeting
for Scenario 3
10/25
10/26
10/27
Meeting

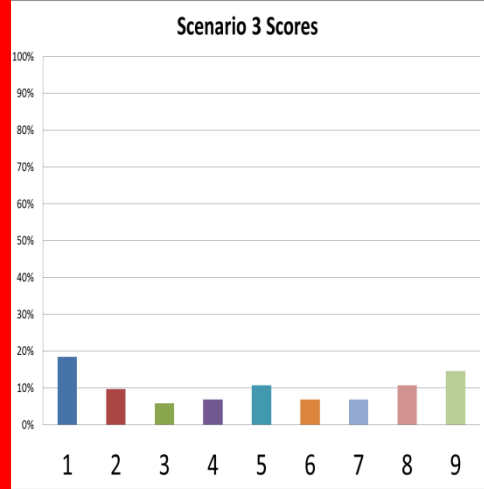

Average of Scenario 4
Average Scores
by Meeting
for Scenario 4
10/25
10/26
10/27
Meeting

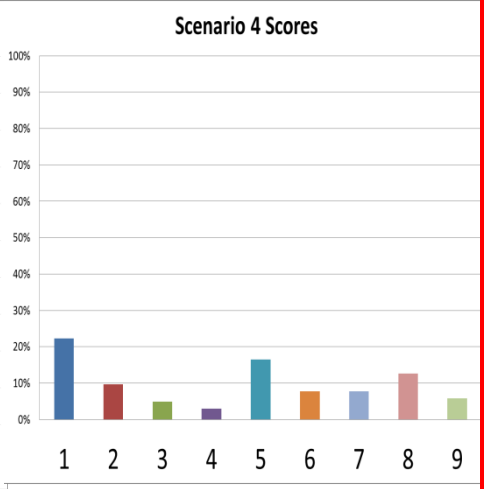

Average of Scenario 5
Average Scores
by Meeting
for Scenario 5
10/25
10/26
10/27
Meeting

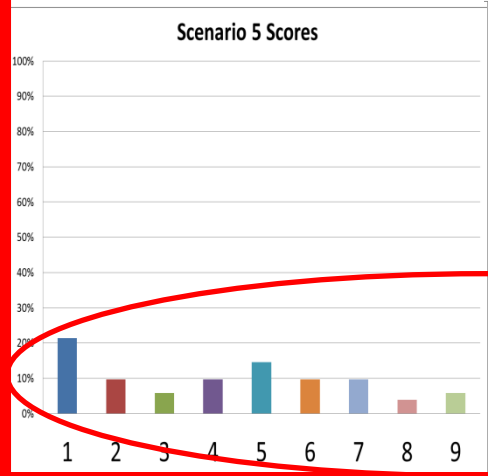

Average of Scenario 6
Average Scores
by Meeting
for Scenario 6
10/25
10/26
10/27
Meeting

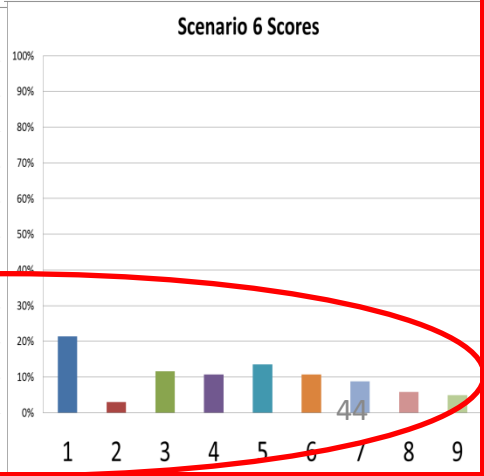

Scenario 1 Scores


Scenario 2 Scores


Scenario 3 Scores


Scenario 4 Scores


Scenario 5 Scores


Scenario 6 Scores

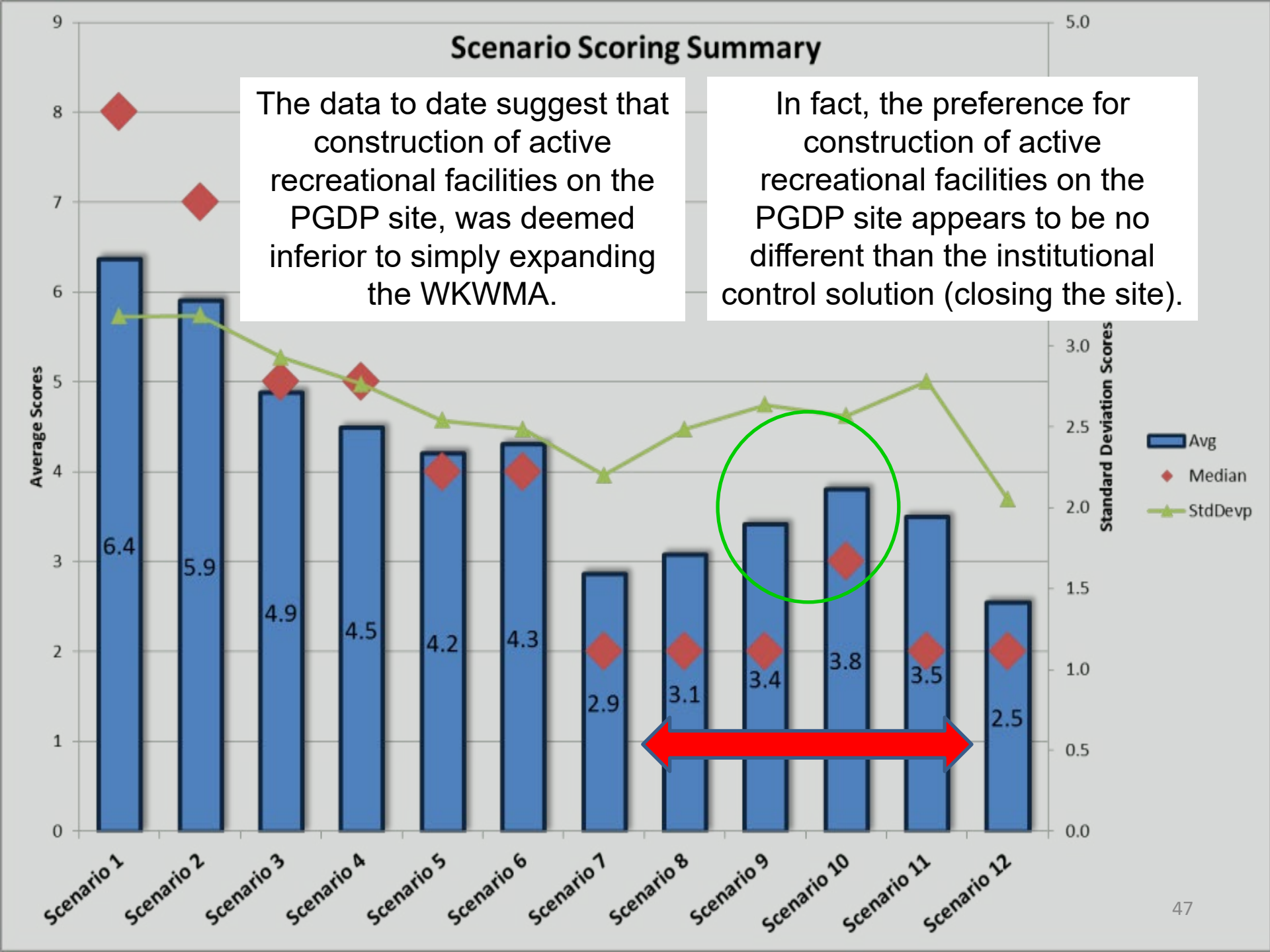
Light Industry Participant Discussion

Public appeal; waste & recreation constraints

- "This seems to be one of the easier ones for the public to swallow."
- "We thought it was one of the easier [scenarios] for maybe the public to accept."
- "The waste cell: some people may look at it as a buffer to the light industry…"
- "The rec facility could be a positive attraction for the facility, by attracting people to it and getting rid of the secretiveness of what was the Paducah Gaseous Diffusion Plant."
- "[This scenario represents] the continuation of jobs and employment here with light industry… That's encouraging 'cause we're all interested in continuing to have a job."
- "No use of the trained workforce—the nuclear workforce—we thought that was a negative…"

Stakeholder Observations On Economic Development

- "[U]nless we have the kinds of jobs that industry affords where people can make enough money to buy a home and educate their children, you're not going to be able to have the other items that make for a good community. You're not going to have nice homes. You're not going to have stores to shop in… Unless there's an economic base to provide for those things, then you're regressing as opposed to progressing."
- "I think the main issue most people are thinking about is the jobs. It's the impact on our economy... We're talking a thousand jobs or more right now. We all want to see something transition with this facility that will -- I don't know that we'll necessarily expect it to be on par with that number of jobs -- but we want to try and retain as many employees as we can."
- "[W]e're thinkin' back to these quality of life issues we've discussed, and which of the scenarios gets us closer to that... [Y]ou've got a lot of those cultural and community aspects, but you need jobs. So is one of the jobs options better than the other? Is nuclear better than heavy industry, or vice versa? Does it matter in that respect?"


Scenario Scoring Summary
The data to date suggest that construction of active recreational facilities on the PGDP site, was deemed inferior to simply expanding the WKWMA.
In fact, the preference for construction of active recreational facilities on the PGDP site appears to be no different than the institutional control solution (closing the site).
Average Scores
Standard Deviation Scores
Avg
Median
StdDevp
6.4
5.9
4.9
4.5
4.2
4.3
2.9
3.1
3.4
3.8
3.5
2.5
Scenario 1
Scenario 2
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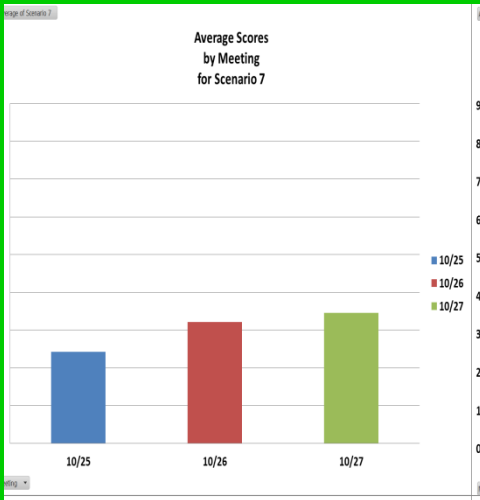
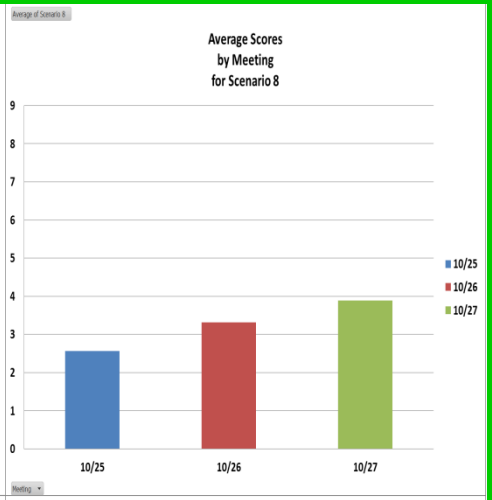
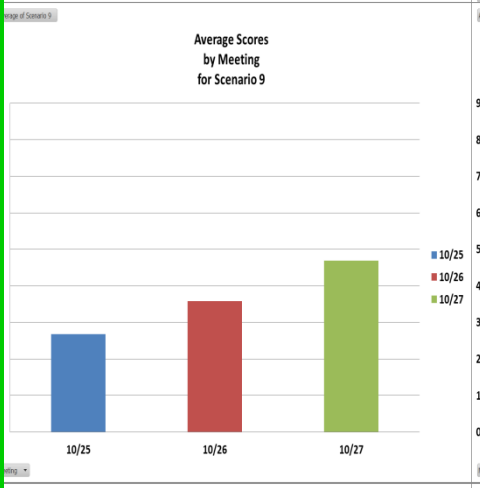
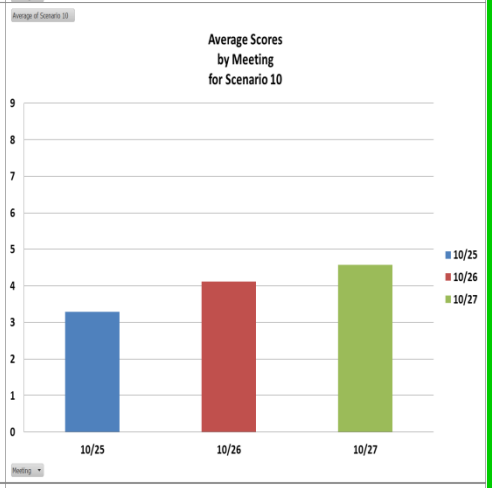
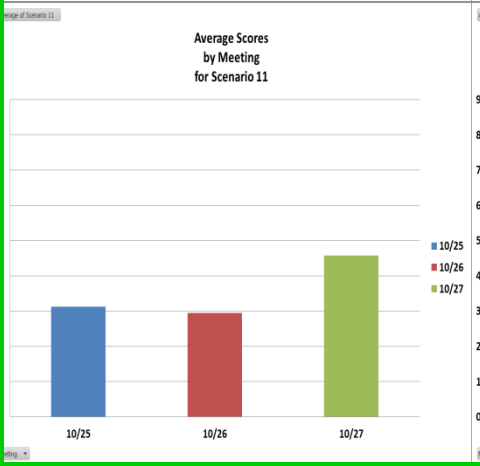
Scenario 11
Scenario 12

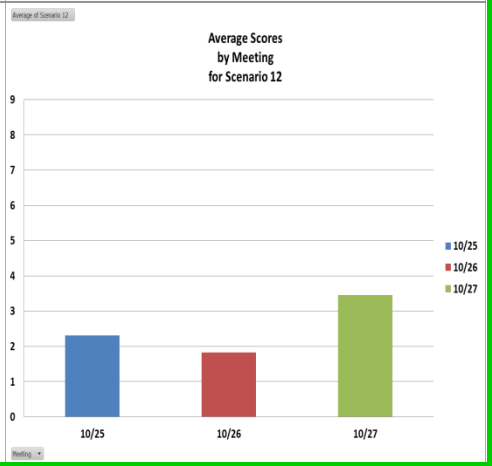

Average Scores
by Meeting
for Scenario 7
10/25
10/26
10/27

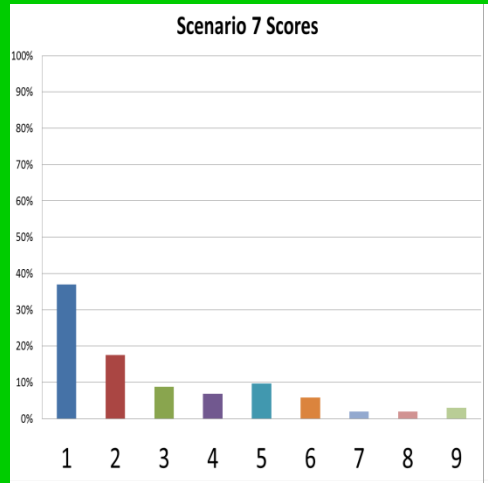

Average Scores
by Meeting
for Scenario 8
10/25
10/26
10/27

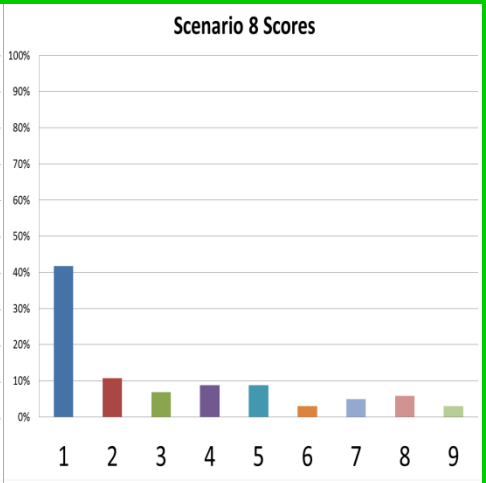

Average Scores
by Meeting
for Scenario 9
10/25
10/26
10/27

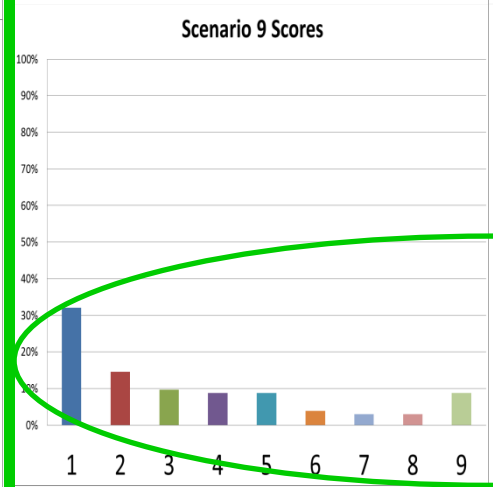

Average Scores
by Meeting
for Scenario 10
10/25
10/26
10/27

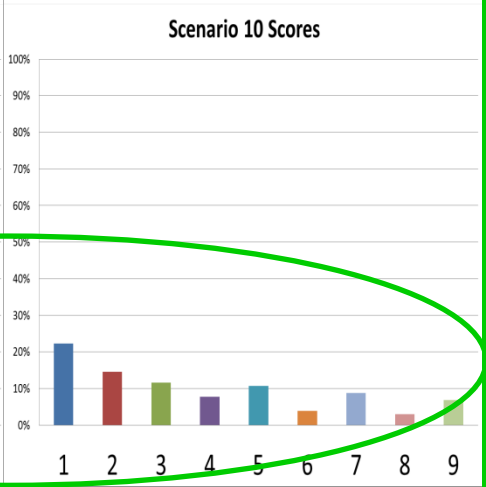

Average Scores
by Meeting
for Scenario 11
10/25
10/26
10/27

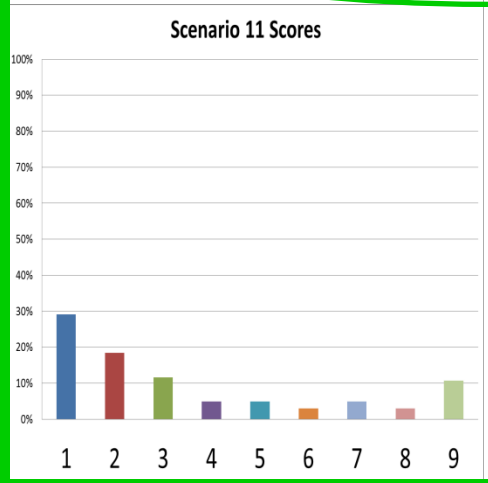

Average Scores
by Meeting
for Scenario 12
10/25
10/26
10/27

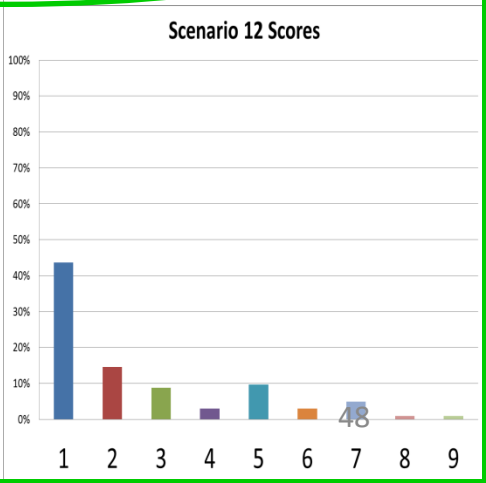

Scenario 7 Scores


Scenario 8 Scores


Scenario 9 Scores


Scenario 10 Scores


Scenario 11 Scores


Scenario 12 Scores

Structured Recreational Land Use

Economic impact concerns and skepticism about usage

- "[I]t would have extreme consequences…for the community in terms of lost revenue because we have not created any jobs for the good of the community."
- "You would be replacing over a thousand jobs with probably less than twenty to maintain that recreational facility."
- "[C]ould it ever be safe enough for people to want a form of recreation out there?"
- "[T]here are already so many recreational facilities in this area, such as the lakes…"
- "There are hazards associated with the...facility that I don't believe I'd want my family out in that area."
- "I think people will always…have some concern…that 'Whoa, wait a minute; I know what they used to do there. How could they have ever cleaned it up to a degree that I want my kids kickin' a ball and playin' in the grass?'"

Structured Recreational Land Use

Economic impact concerns and skepticism about usage

- "You're replacing pretty much everything on this site, with the exception of the DOE offices and the DUF6 facility, with recreational facilities despite the fact that the infrastructure is here for much more. The water treatment plant, the sewer system, power, natural gas. All of that is here. So that's really what we're looking at in this particular case is just basically resigning to the fact of just putting a recreational facility out here and not pursuing other industry..."
- "[We] felt...like makin' recreation inside the fence would cost more because it would take better cleanup in order to have recreation opportunities there. And could it ever be safe enough for people to want a form of recreation out there?"
- "[I]t really is, we believe, a bad use because of the transportation and the utilities that are here that could support major heavy industry or light industry. There's a lot of capabilities here."
- "It would be...difficult to convince the community that this area is ever gonna be clean enough to go out there with their children and do soccer, baseball, whatever it might be…"

Expanded Wildlife Participant Discussion

Economic and environmental tensions

- [W]e thought this was probably the best use for the area, in the long run.“
- “[Expanding the WMA represents] a lot of continued and enhanced recreational uses of the area; enhanced economic potential, secondary to widespread recreational uses.. And then, in a way, it would maintain and improve the overall quality of the life in the surrounding community.”
- “It enhances the public use of the Western Kentucky Wildlife Management Area and Nature Preserve [and] would facilitate adjoining development… People would be more likely to use the surrounding area. Also, the economic impact of the area would be enhanced through the additional use for—potentially from the area...and around the country.”
- “It blends well with the surrounding area... But…you’ve gotten rid of industry and the whole jobs and employment kind of thing has went away. So, I mean, good preserve, bad that you lose jobs.“

Expanded Wildlife Participant Discussion

Economic and environmental tensions

- "I probably wouldn't go out there..."
- "[W]e have plenty of opportunities for wildlife areas and outdoor recreation around here; we really do... What this area needs is economic development of some sort."
- "I think it would affect [the community] very negatively. [T]he tax-base cannot stand if you do away with [industrial or commercial use]..."
- "[If] people don't have jobs, they don't have opportunities to do what helps you be able to get to go to the outdoors and have money and stuff."
- "[W]e have plenty of opportunities for wildlife areas and outdoor recreation around here; we really do. We have lots of opportunities. What this area needs is economic development of some sort."

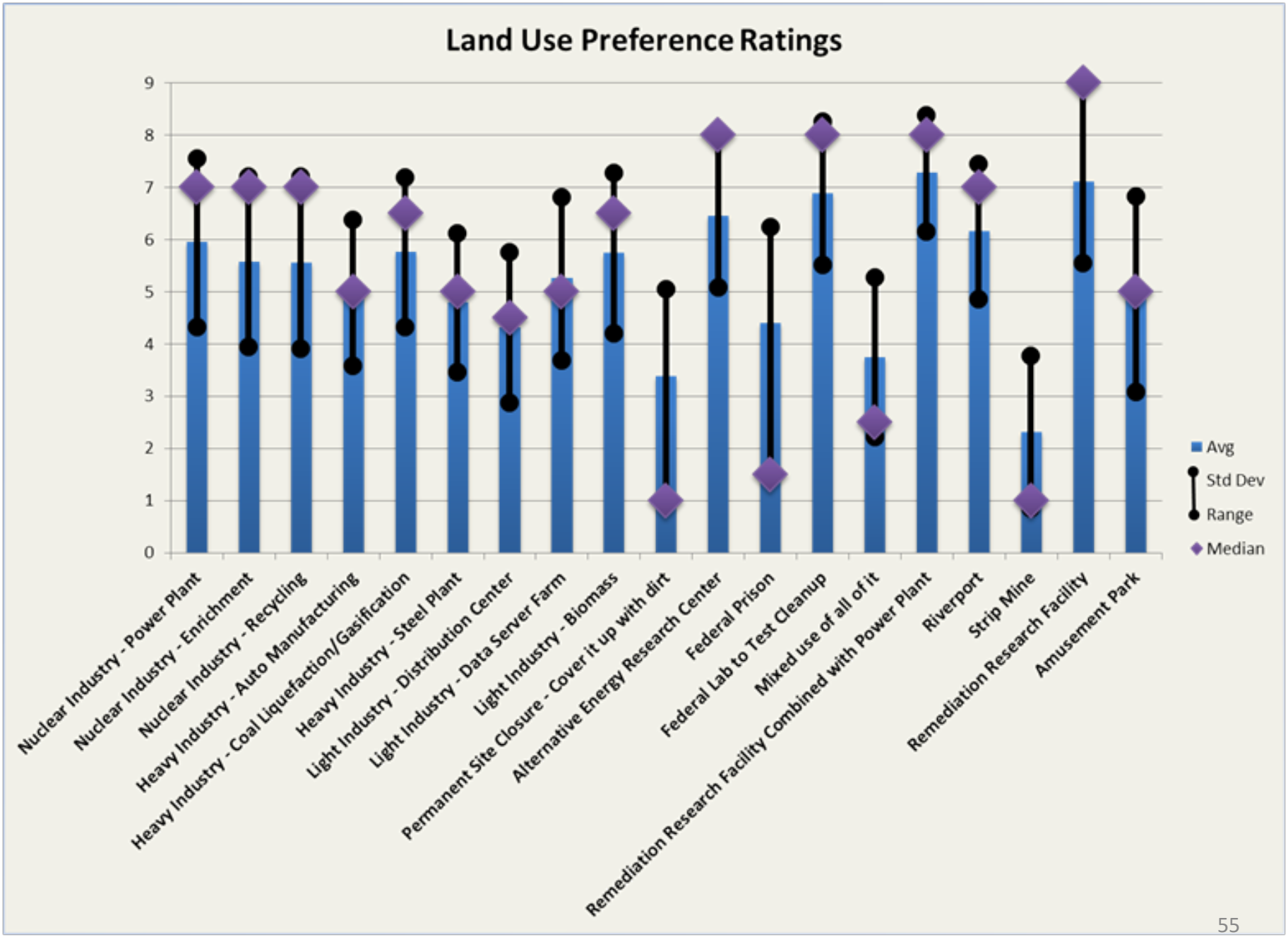
Institutional Control Participant Discussion

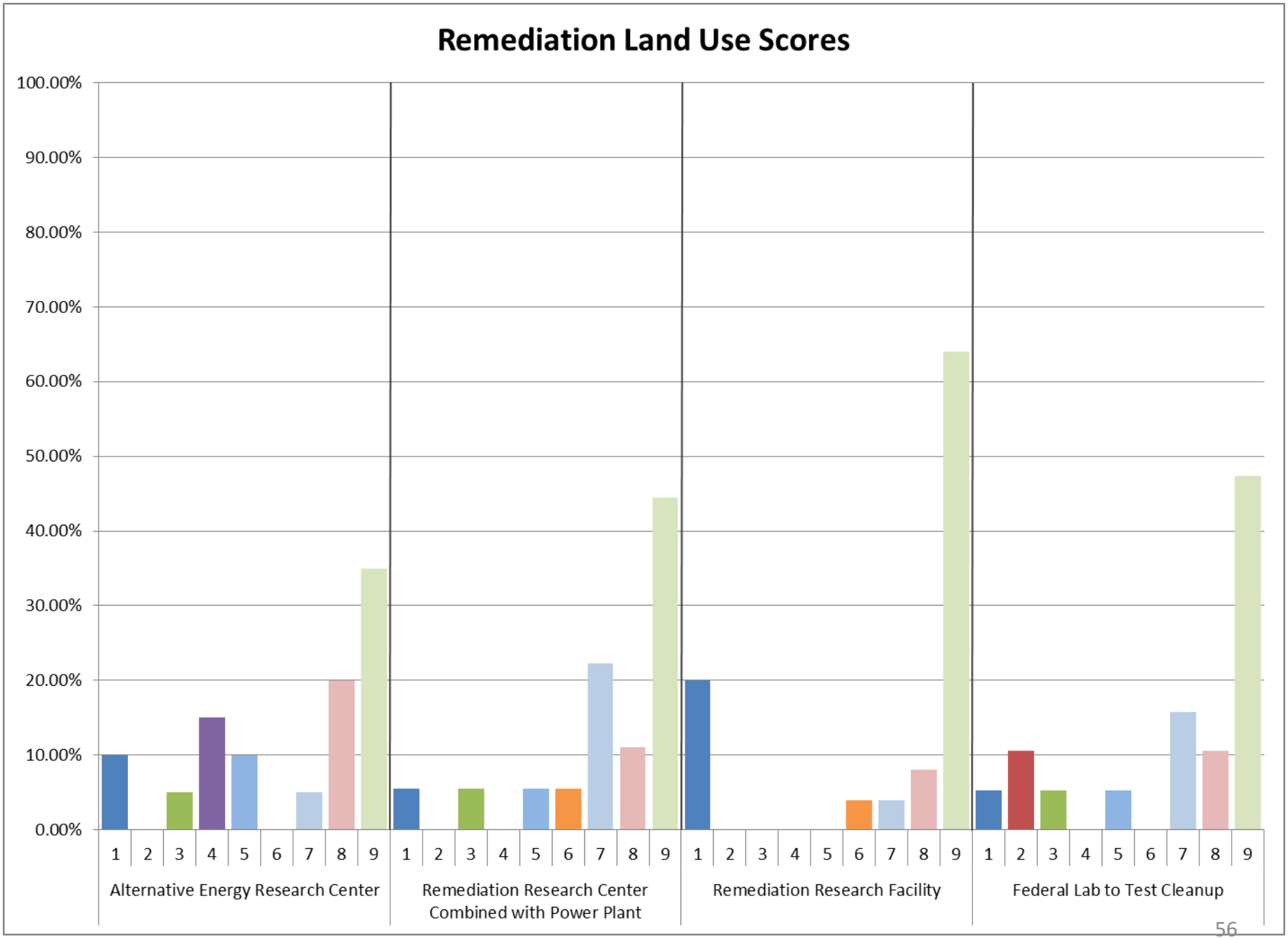
Competing economic and environmental discourses

- "[W]hen I see it fenced like that, to me it says that there's a problem like it's not cleaned up. Everything is still there."
- "[T]hat's not good for the environment and that's not good for the economy.. [T]he consequences are there are no jobs, and it's not being a good steward to the earth, and I didn't much care for it."
- ""[Y]ou're wasting the existing infrastructure that's already at the plant… [T]o me this place isn't nearly that bad that you would throw that type of infrastructure away."
- "[T]o me, it looked like an attempt to undo damage. It's damage that I don't think can ever be undone, but it's an attempt to do something about it."
- "It doesn't matter what you do to it. It's going to be contaminated. It can't be cleaned up."
- "[F]rom our perspective, it would be a good way of going forward…with very little or neutral impact on outdoor usage."

Stakeholder-Suggested Scenarios

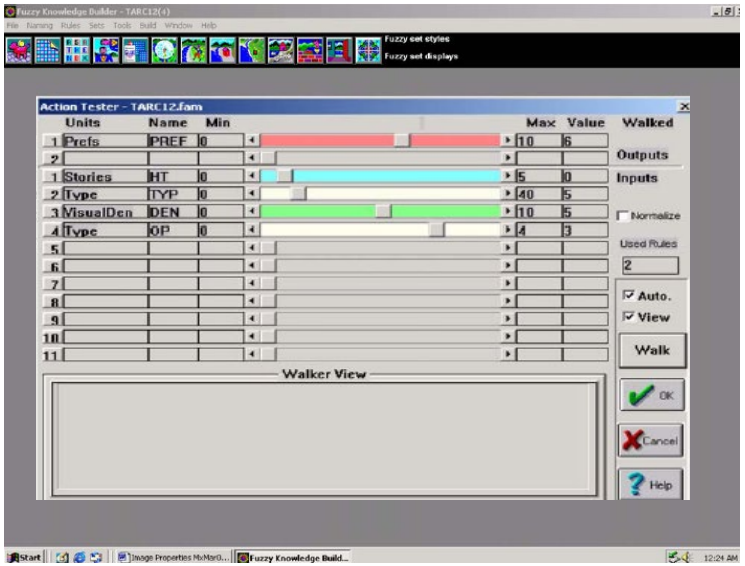
- Top Scores on Scenarios Suggested by Participants
  - Alternative Energy Center
  - Federal Lab to Test Cleanup
  - Remediation Research Facility Combined with Power Plant
  - Remediation Research Facility
- This type of facility was suggested independently at all three scenario scoring meetings, and received the highest scores at all three meeting among all scenarios
- This type of facility was similar to one also recommended by the CAB in its 2005 recommendations


Land Use Preference Ratings
9
8
7
6
5
4
3
2
1
0
Nuclear Industry - Power Plant
Nuclear Industry - Enrichment
Nuclear Industry - Recycling
Heavy Industry - Auto Manufacturing
Heavy Industry - Coal Liquefaction/Gasification
Heavy Industry - Steel Plant
Light Industry - Distribution Center
Light Industry - Data Server Farm
Light Industry - Biomass
Permanent Site Closure - Cover it up with dirt
Alternative Energy Research Center
Federal Prison
Federal Lab to Test Cleanup
Mixed use of all of it
Remediation Research Facility Combined with Power Plant
Riverport
Strip Mine
Remediation Research Facility
Amusement Park
Avg
Std Dev
Range
Median

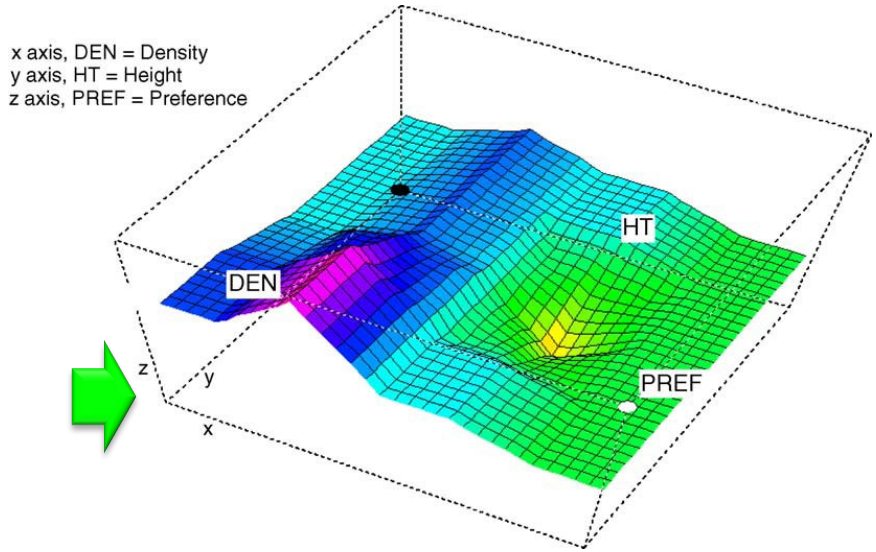

Remediation Land Use Scores
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
1 2 3 4 5 6 7 8 9
Alternative Energy Research Center
1 2 3 4 5 6 7 8 9
Remediation Research Center Combined with Power Plant
1 2 3 4 5 6 7 8 9
Remediation Research Facility
1 2 3 4 5 6 7 8 9
Federal Lab to Test Cleanup

Community Preference Model

(CAsewise **V**isual **E**valuation (CAVE) - Dr. Keiron Bailey - UA)

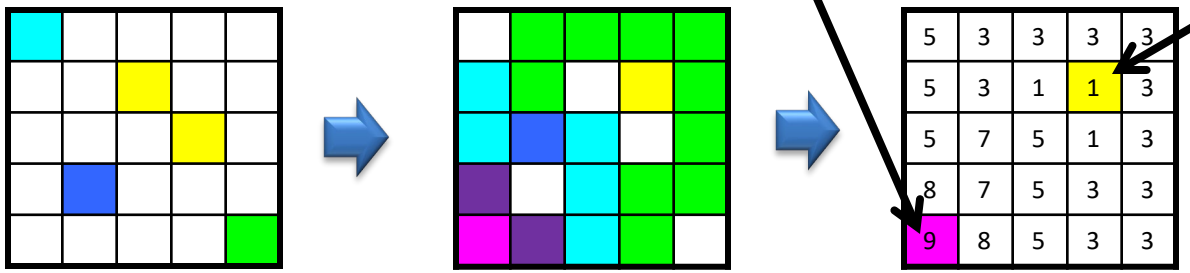


Fuzzy Knowledge Builder



Good Solution

Bad Solution



Sampled Scenarios

Modeled Scenarios

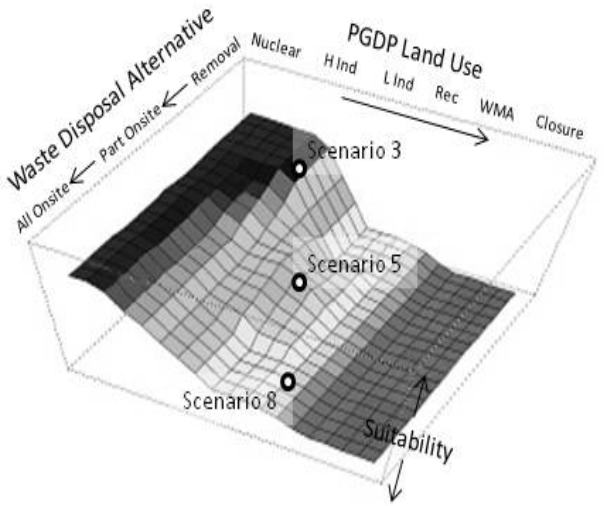
Solution Evaluation

Observations

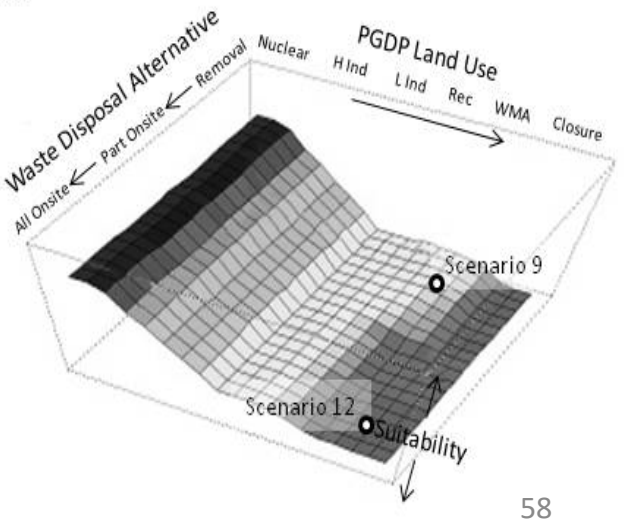
- To date, the data suggest that secondary factors:
  - WKWMA land use
  - Legacy Wastes (Burial Grounds)
  - Future Wastes (Waste Disposal Alternatives)

Do not affect the preferred choice of the primary land use.

- PGDP Land Use – x axis
- WMA Land Use – Added Recreation
- Waste Disposal Alternative – y axis
- Legacy Waste – Dig Up



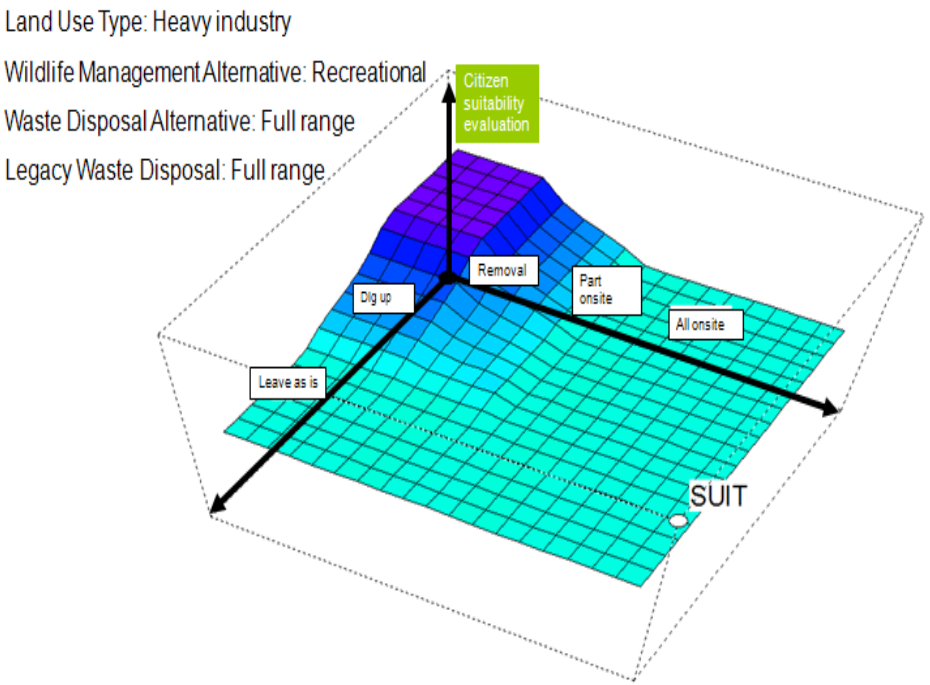
- PGDP Land Use – x axis
- WMA Land Use – Added Recreation
- Waste Disposal Alternative – y axis
- Legacy Waste – Leave As Is

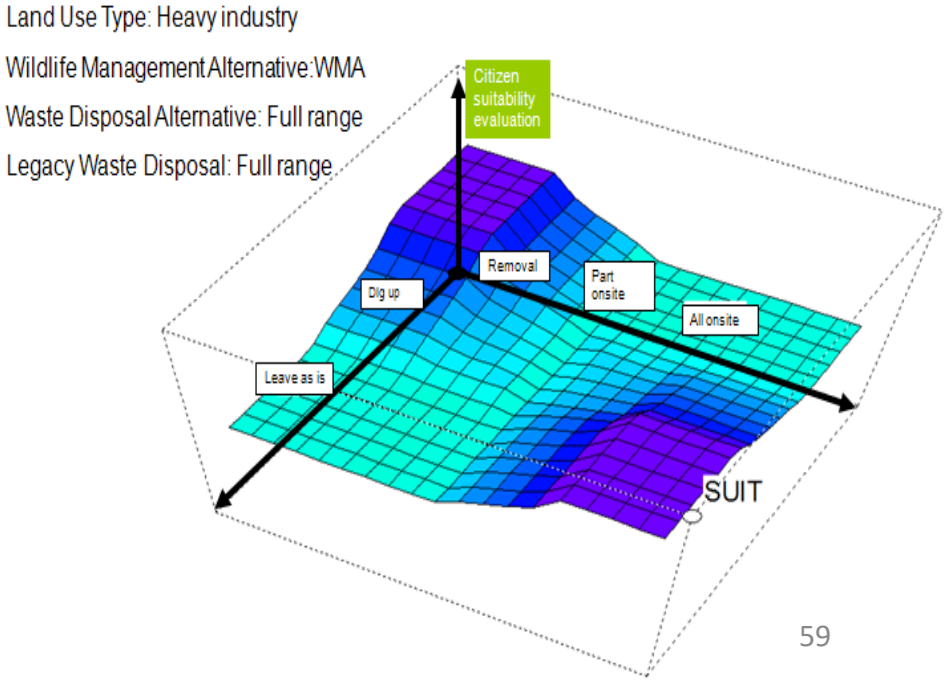


Observations

- To date, the data suggest that primary land use factors:
  - PGDP land use
  - WKWMA land use

  Can affect the preferred choices of secondary factors:
  - Legacy Wastes (Burial Grounds)
  - Future Wastes (Waste Disposal Alternatives)

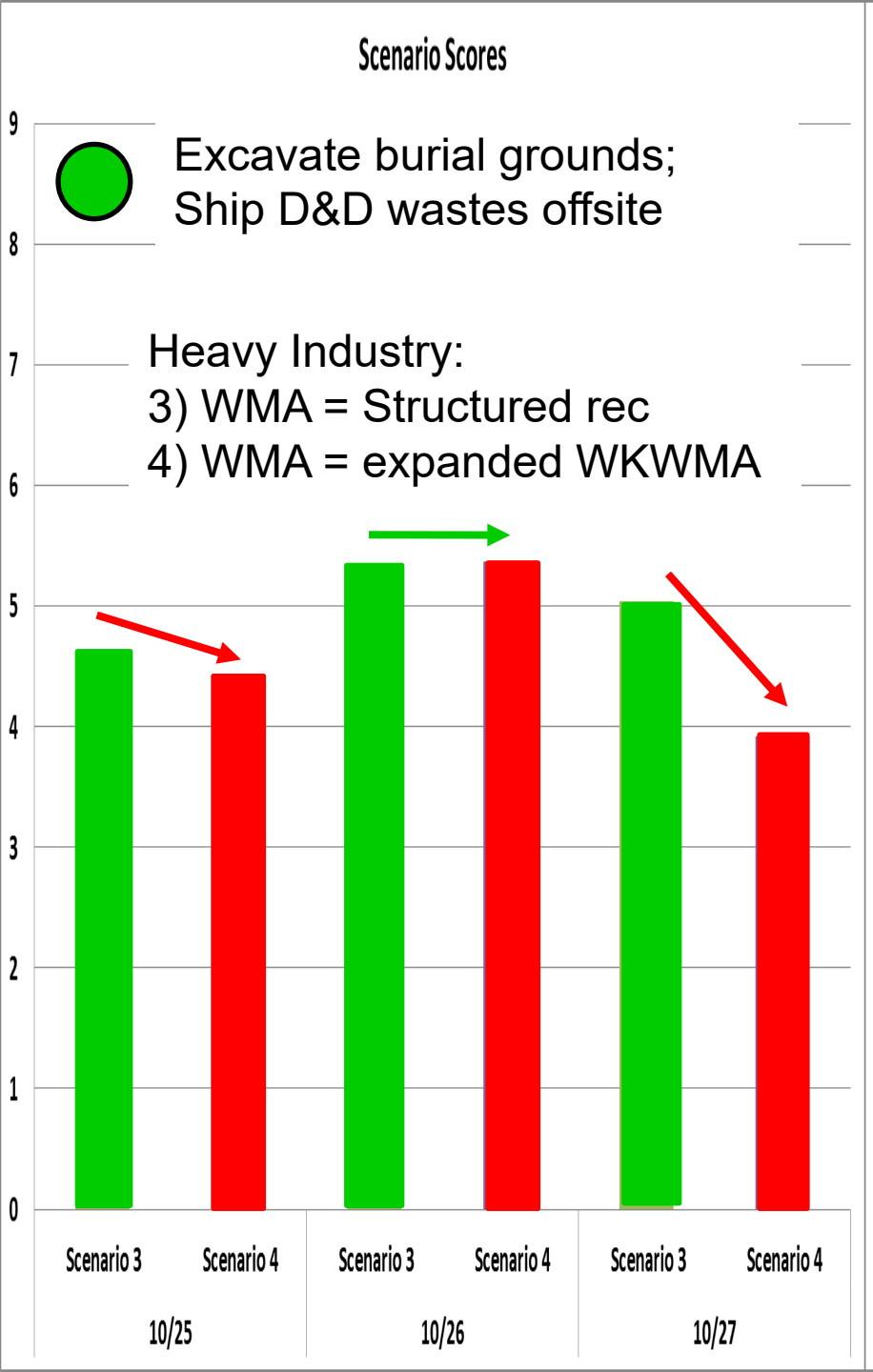


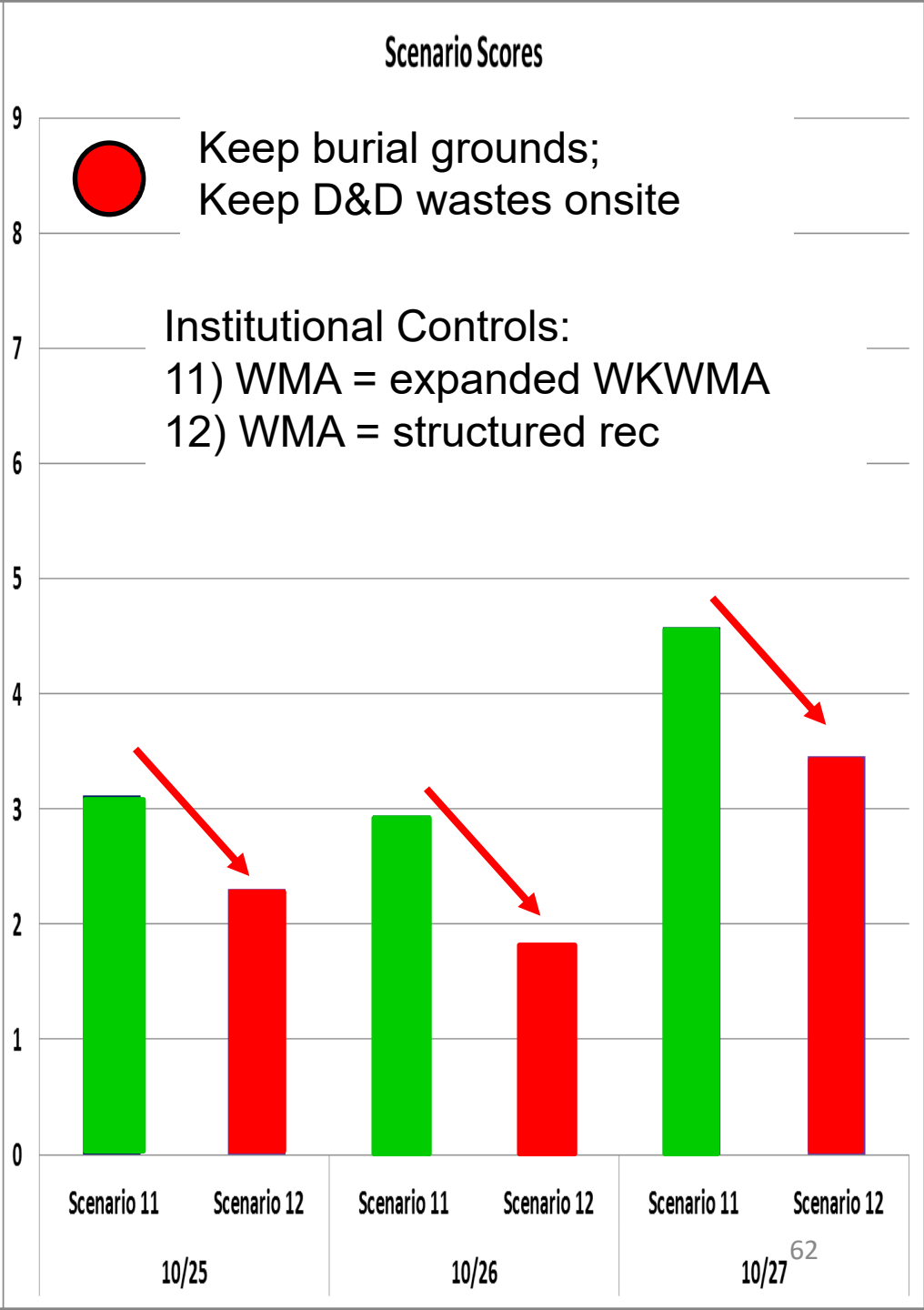


Observations

- From both the qualitative and quantitative analysis, the data would suggest that most participants favor removal of both the burial grounds and the D&D wastes from the site.
- Reasons
  - Health and safety concerns
  - Negative impact on recruiting new business
- Exceptions:
  - USEC employees
    - (keeping waste on-site insures jobs)
  - WKWMA users
    - (waste keeps others away)
  - Some environmentalists
    - (unethical to ship our wastes to others)

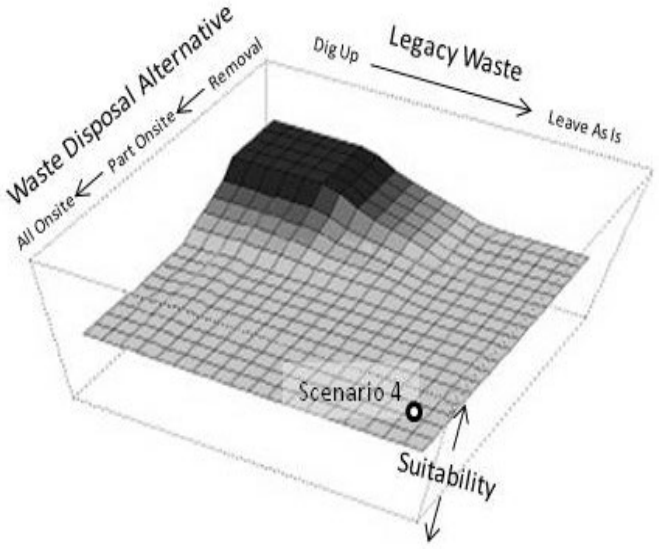

Scenario Scoring Summary
Average Scores
Standard Deviation Scores
0
1
2
3
4
5
6
7
8
9
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
6.4
5.9
4.9
4.5
4.2
4.3
2.9
3.1
3.4
3.8
3.5
2.5
Scenario 1
Scenario 2
Scenario 3
Scenario 4
Scenario 5
Scenario 6
Scenario 7
Scenario 8
Scenario 9
Scenario 10
Scenario 11
Scenario 12
Avg
Median
StdDevp


Scenario Scores
Excavate burial grounds;
Ship D&D wastes offsite
Heavy Industry:
3) WMA = Structured rec
4) WMA = expanded WKWMA
9
8
7
6
5
4
3
2
1
0
Scenario 3
Scenario 4
Scenario 3
Scenario 4
Scenario 3
Scenario 4
10/25
10/26
10/27


Scenario Scores
Keep burial grounds;
Keep D&D wastes onsite
Institutional Controls:
11) WMA = expanded WKWMA
12) WMA = structured rec
9
8
7
6
5
4
3
2
1
0
Scenario 11
Scenario 12
Scenario 11
Scenario 12
Scenario 11
Scenario 12
10/25
10/26
10/27

Stakeholder Observations: Waste Disposal

- PGDP Land Use – Heavy Industry
- WMA Land Use – Left As Is
- Waste Disposal Alternative – y axis
- Legacy Waste – x axis



- "[T]alking about decommissioning the present plant and keeping the waste here --I don't agree with that at all. I think it ought to be shipped."

- "[W]e couldn't get the Atlas plant to come to Paducah because of seismic issues, but we can build a nuclear waste site out there, and it's safe? I think that's the public perception that is gonna be very, very difficult to overcome…"

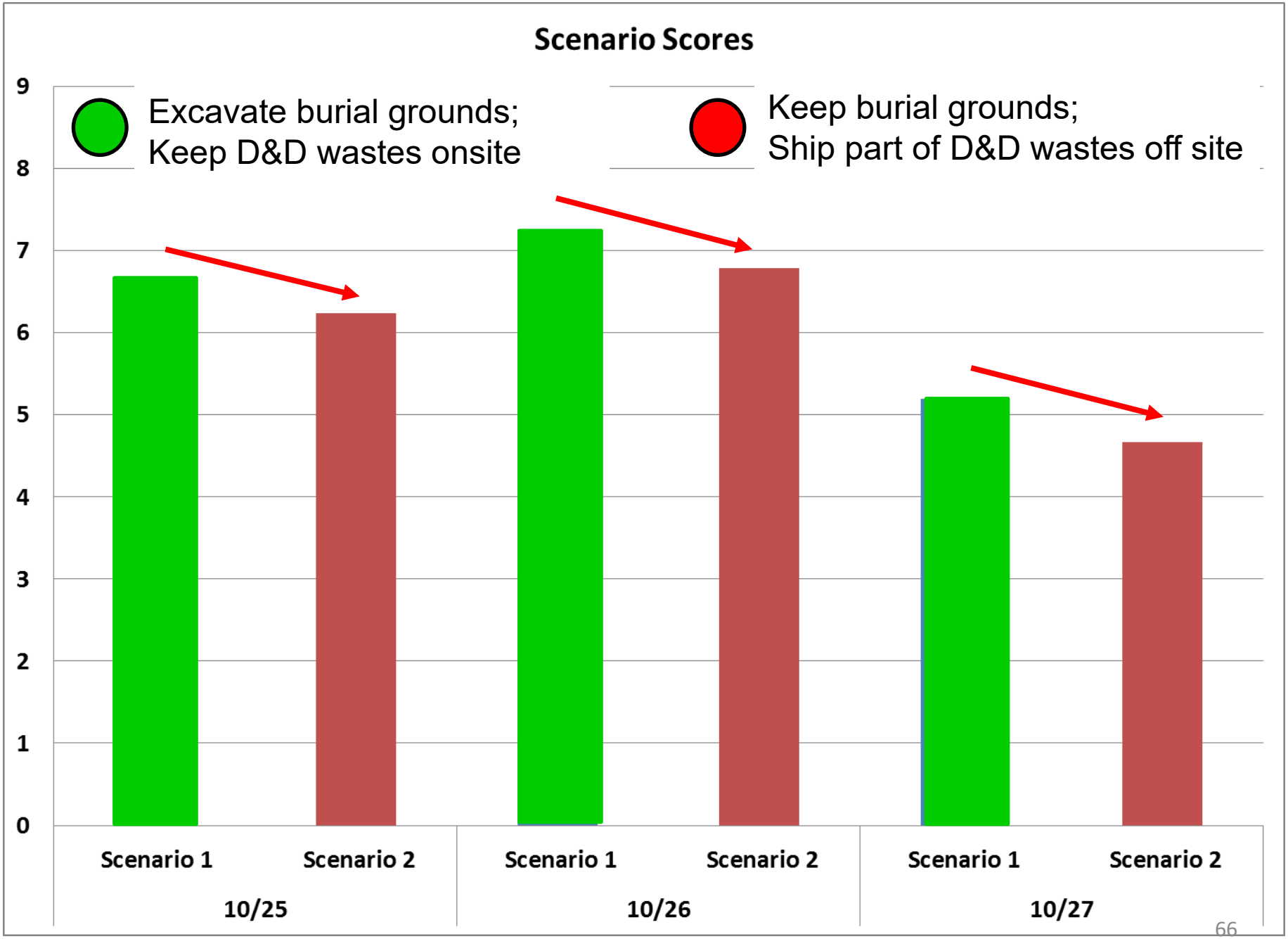
- "We thought [leaving wastes onsite] would be a low cost solution to clean up, but it would be detrimental to recruiting non-nuclear industry."

- "The only good outcome I can see is minimize the harm as much as possible, and you do it in a way that you don't cause additional harm someplace else by moving it off-site and putting it in someone else's backyard. My God, I hate that that thing's there, but what do you do? It's there."

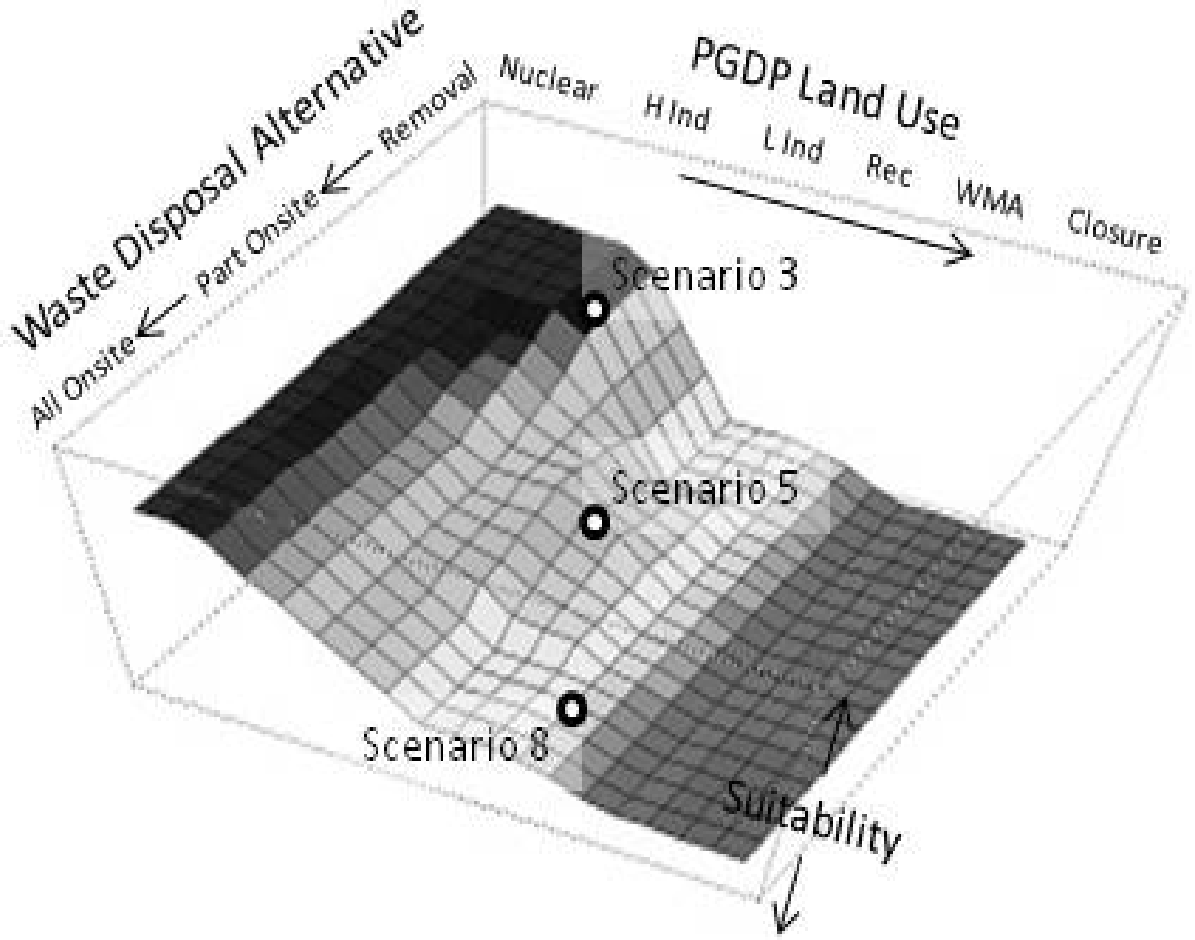
Observations

- From both the qualitative and quantitative analysis, the data would suggest that most participants place a higher priority on removal of the burial grounds than the D&D wastes from the site.
- Reasons
  - Health and safety concerns
- Exceptions:
  - USEC employees
    - (keeping waste on-site insures jobs)
  - Some environmentalists
    - (unethical to ship our wastes to others)

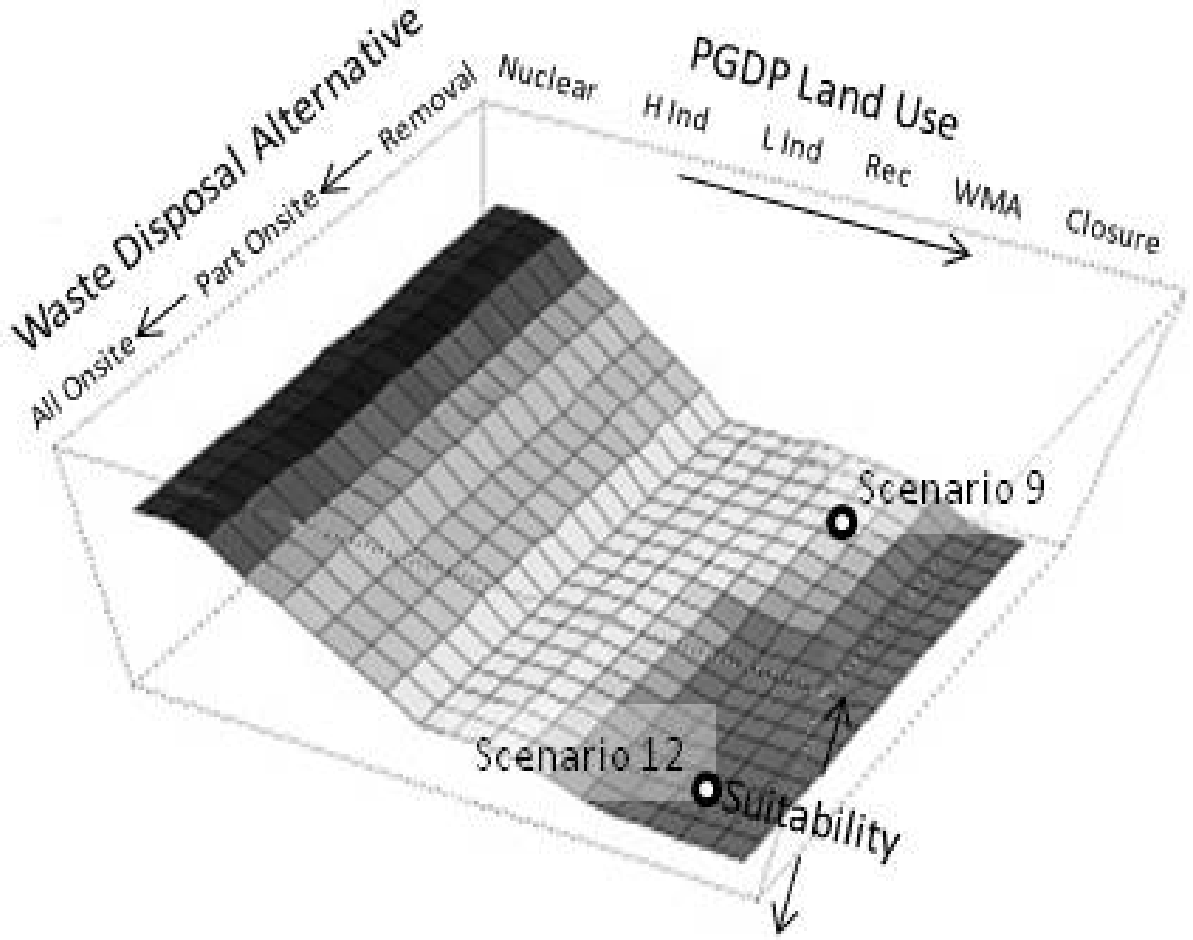

Scenario Scoring Summary
Average Scores
Standard Deviation Scores
0
1
2
3
4
5
6
7
8
9
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
6.4
5.9
4.9
4.5
4.2
4.3
2.9
3.1
3.4
3.8
3.5
2.5
Scenario 1
Scenario 2
Scenario 3
Scenario 4
Scenario 5
Scenario 6
Scenario 7
Scenario 8
Scenario 9
Scenario 10
Scenario 11
Scenario 12
Avg
Median
StdDevp


Scenario Scores
Excavate burial grounds;
Keep D&D wastes onsite
Keep burial grounds;
Ship part of D&D wastes off site
9
8
7
6
5
4
3
2
1
0
Scenario 1
Scenario 2
Scenario 1
Scenario 2
Scenario 1
Scenario 2
10/25
10/26
10/27

- PGDP Land Use – x axis
- WMA Land Use – Added Recreation
- Waste Disposal Alternative – y axis
- Legacy Waste – Dig Up

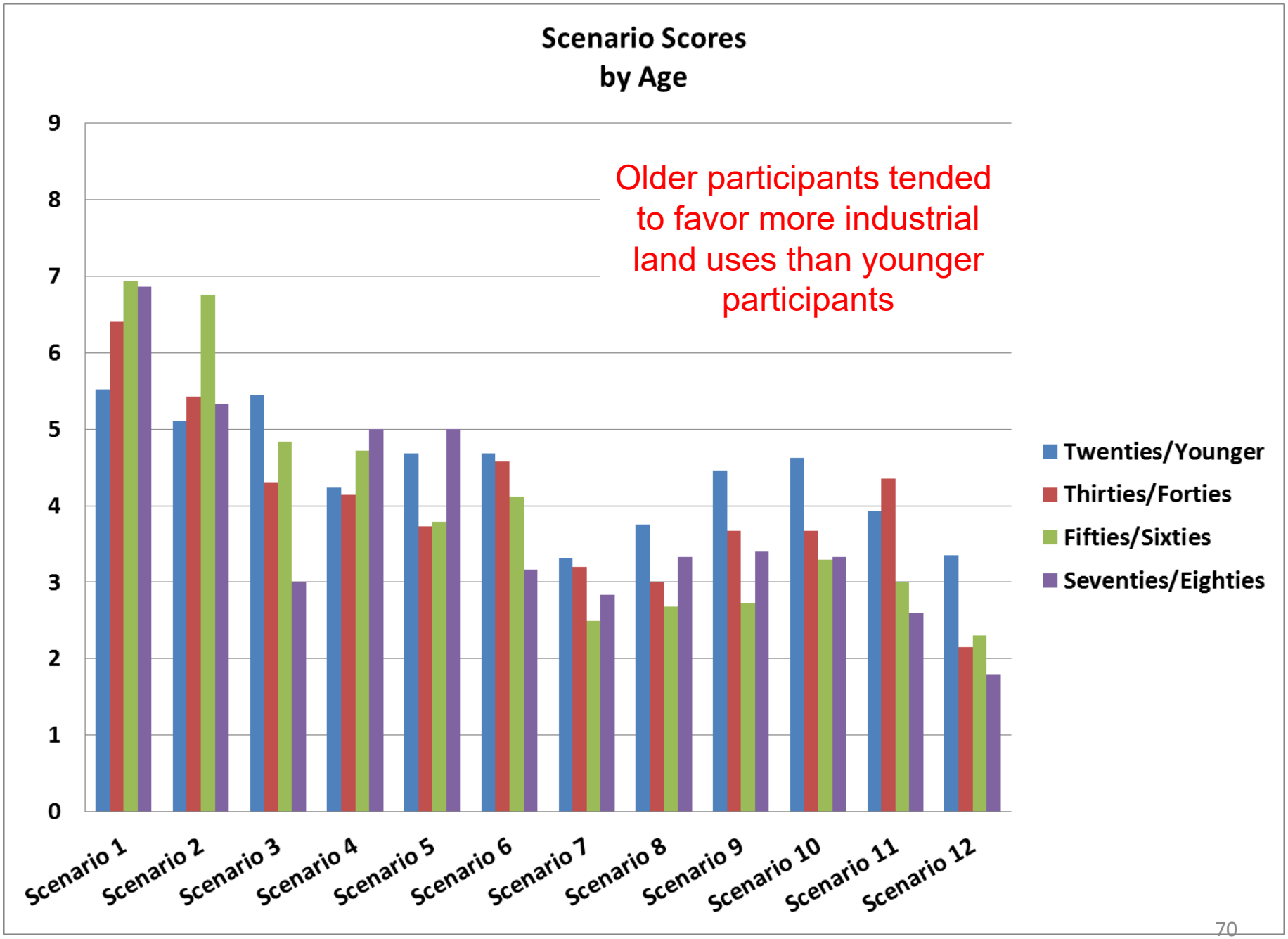


- PGDP Land Use – x axis
- WMA Land Use – Added Recreation
- Waste Disposal Alternative – y axis
- Legacy Waste – Leave As Is



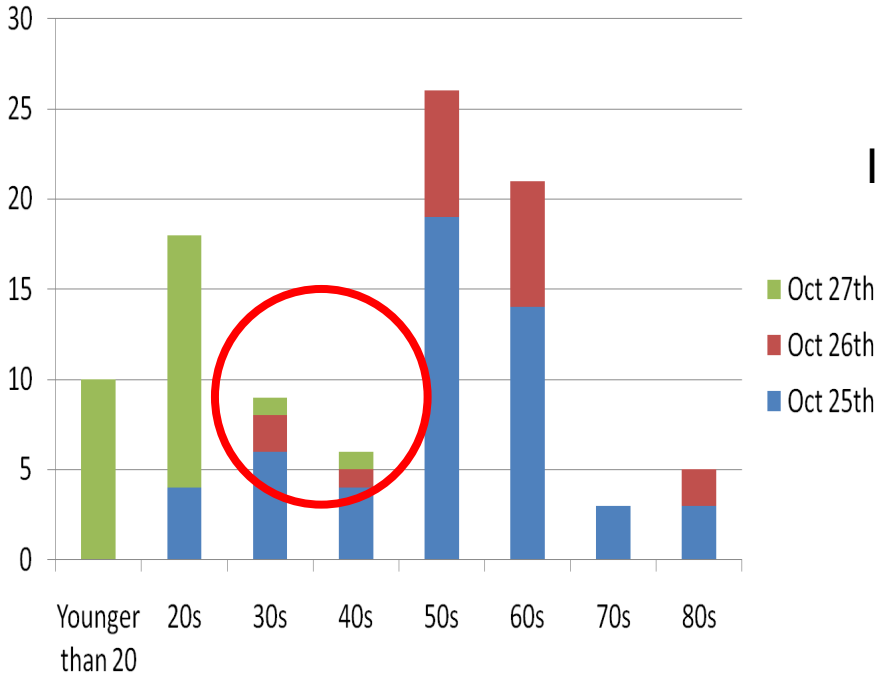
Demographic Analysis

- By Age
- By Gender
- By Residence
- By Meeting
- By Focus Group


Scenario Scores
by Age
Older participants tended to favor more industrial land uses than younger participants
9
8
7
6
5
4
3
2
1
0
Scenario 1
Scenario 2
Scenario 3
Scenario 4
Scenario 5
Scenario 6
Scenario 7
Scenario 8
Scenario 9
Scenario 10
Scenario 11
Scenario 12
Twenties/Younger
Thirties/Forties
Fifties/Sixties
Seventies/Eighties

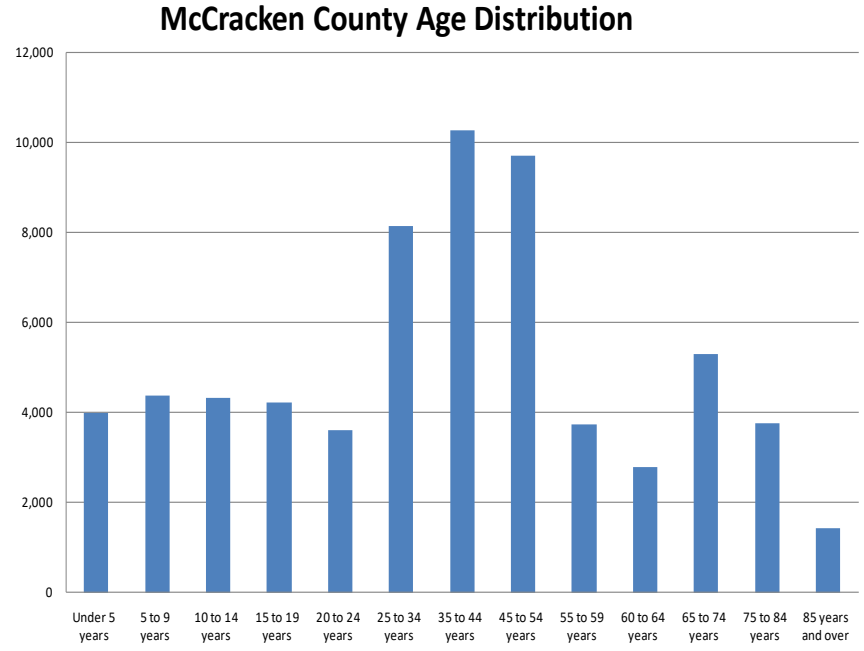
Age Demographics

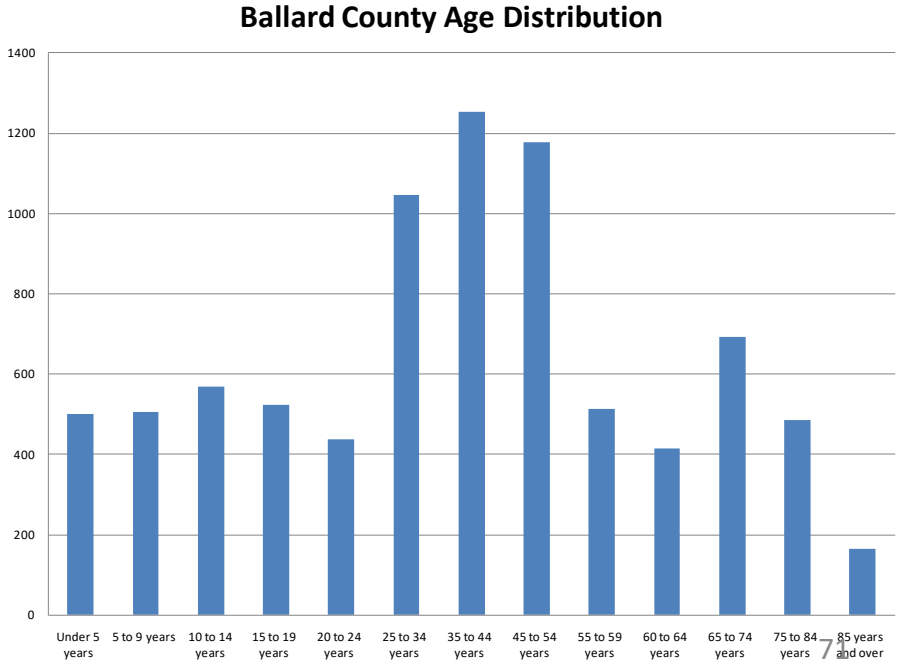
Data collected to date have a gap in the 30s and 40s, which is the largest demographic In both McCraken and Ballard Counties.



Missing segment In which jobs and kids are especially Important.

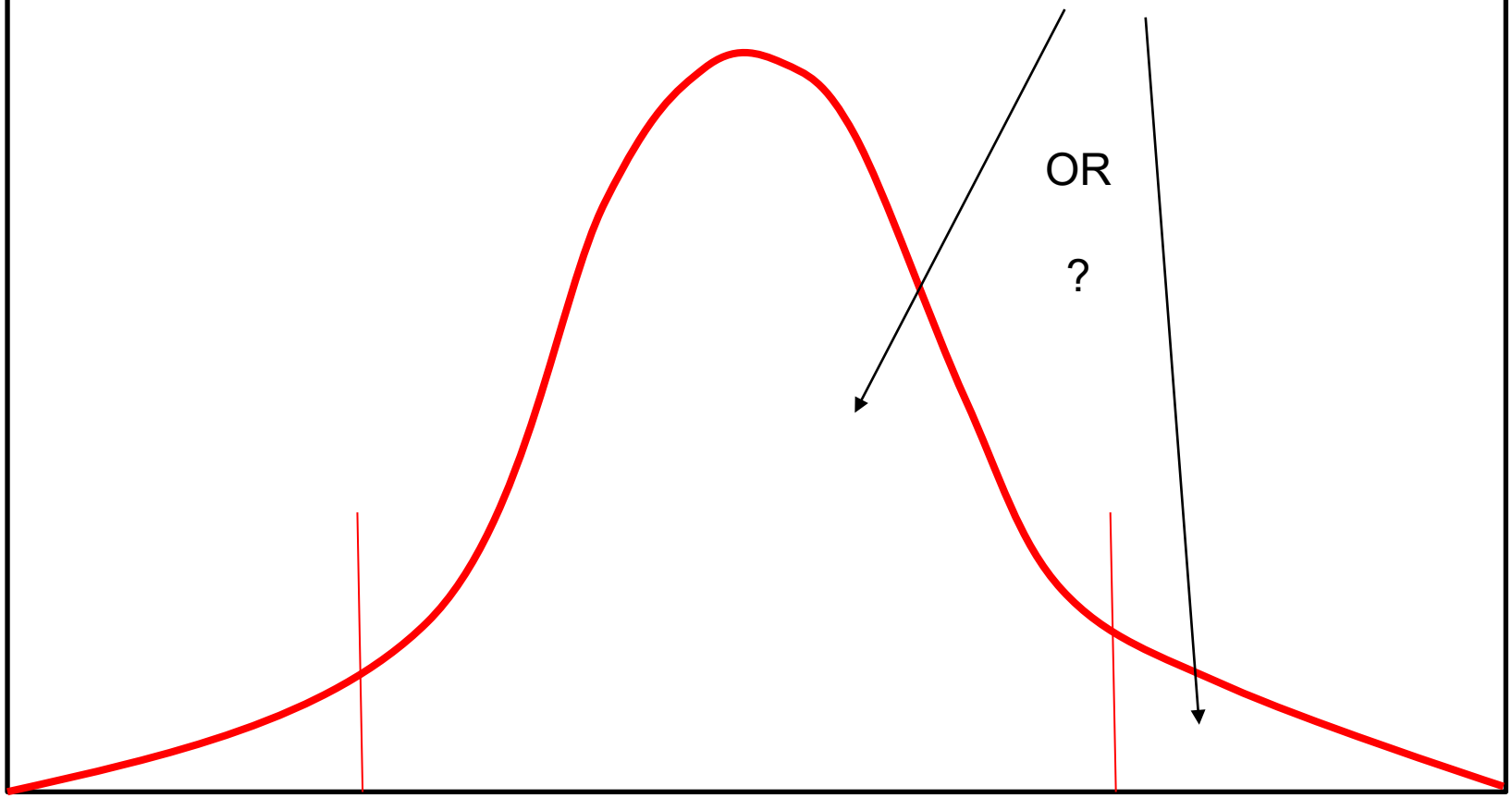
Harder for this demographic to attend meetings.



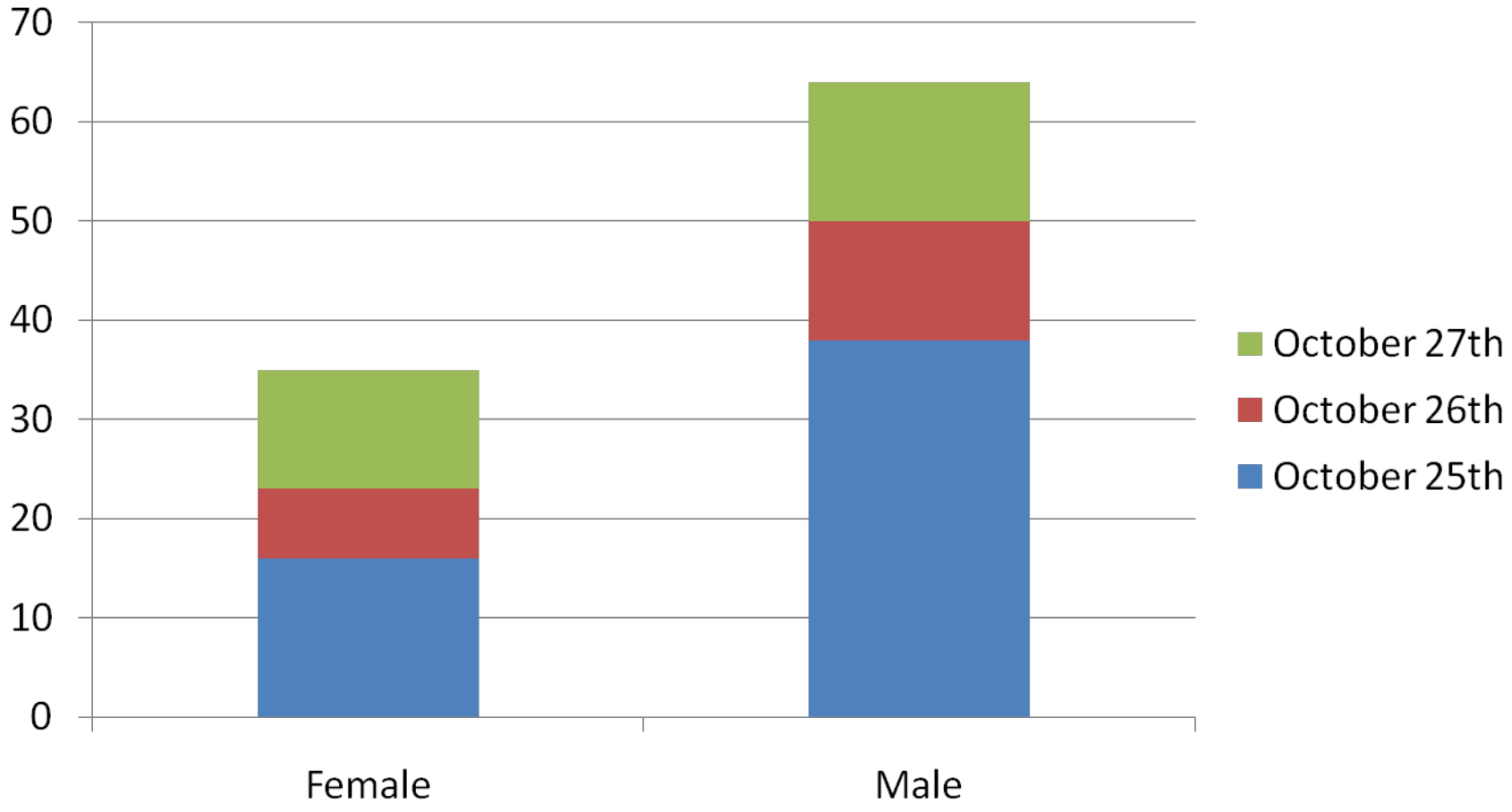


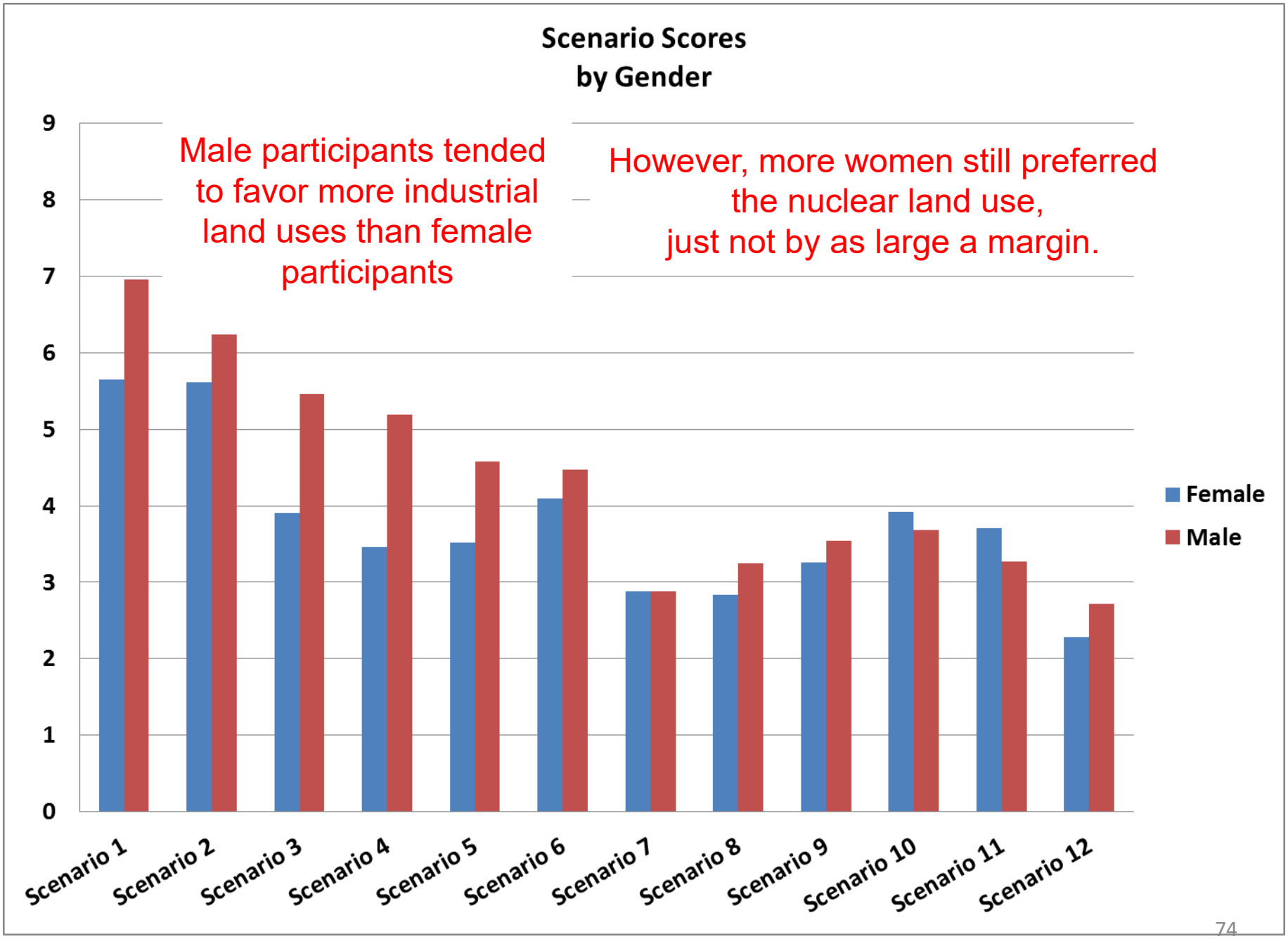
Sample Question

Is the preference distribution really bi-modal for the entire community or are we just sampling both ends of the spectrum (i.e. the tails)

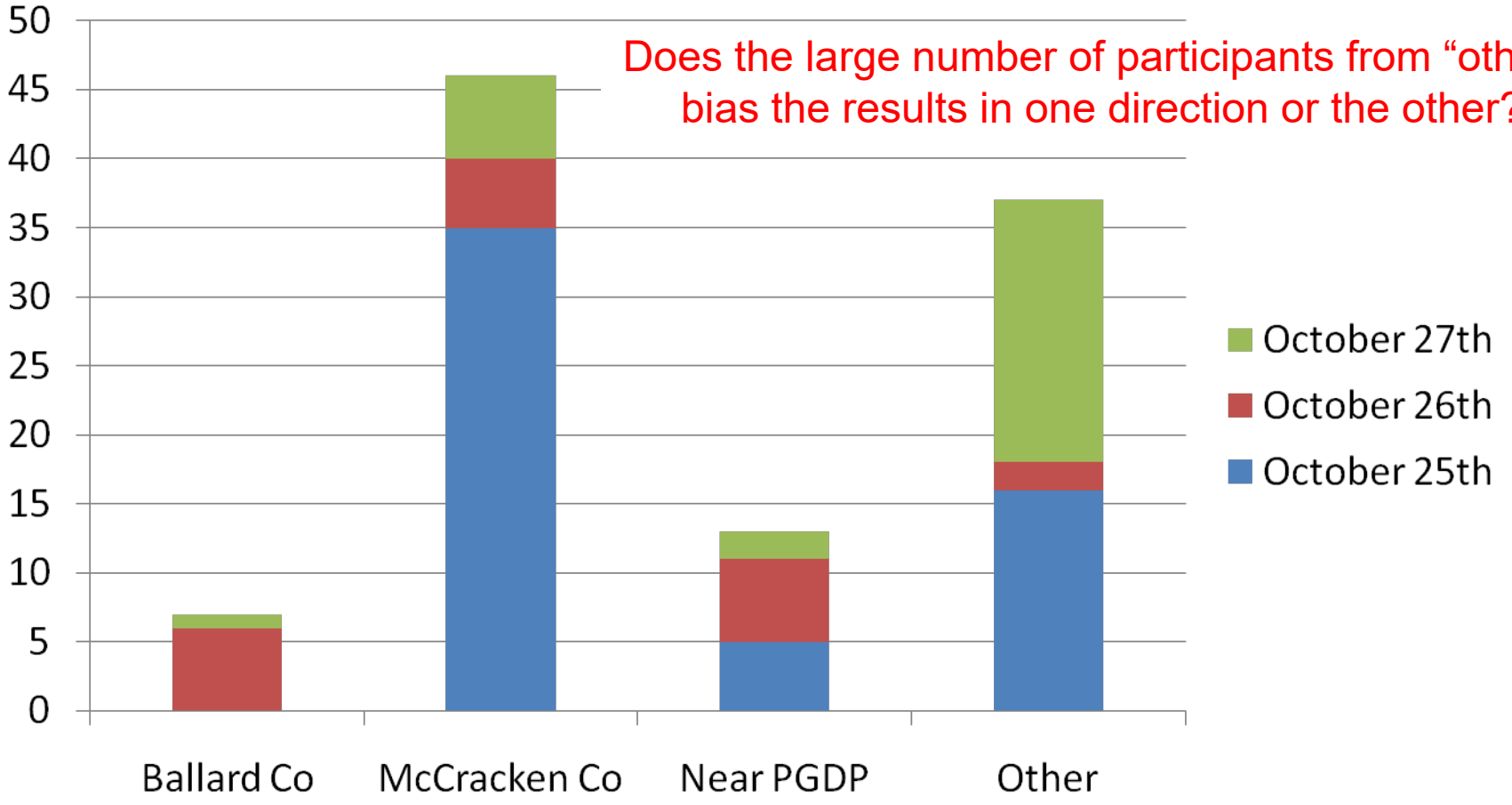


What is your gender for October 25th,26th,27th ,2010

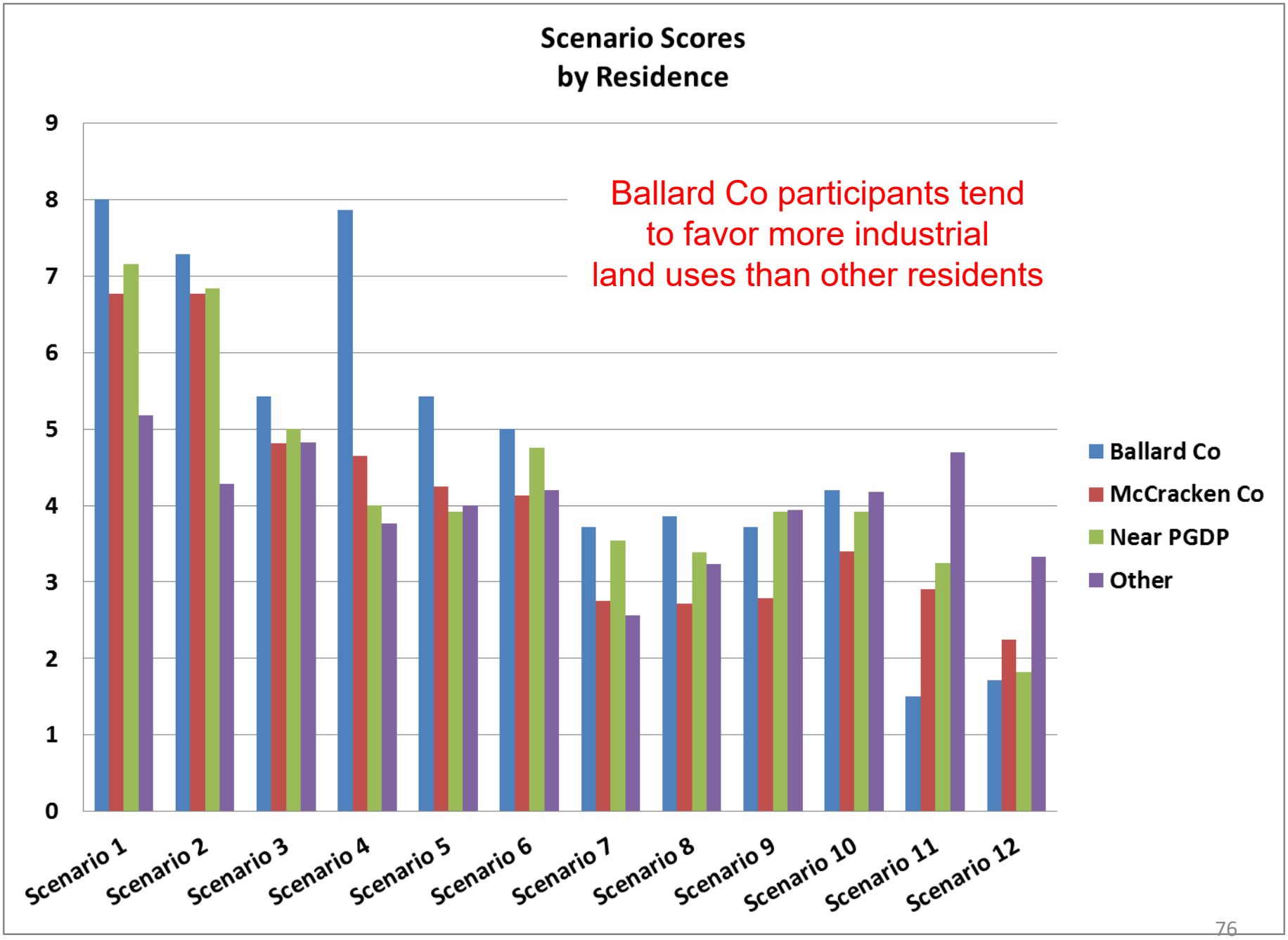


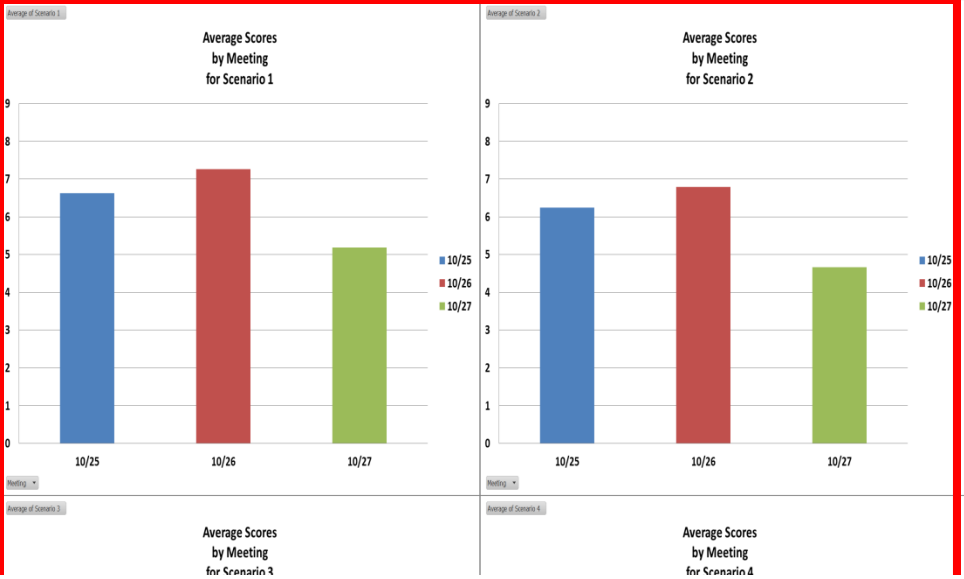

Scenario Scores
by Gender
Male participants tended to favor more industrial land uses than female participants
However, more women still preferred the nuclear land use, just not by as large a margin.
9
8
7
6
5
4
3
2
1
0
Scenario 1
Scenario 2
Scenario 3
Scenario 4
Scenario 5
Scenario 6
Scenario 7
Scenario 8
Scenario 9
Scenario 10
Scenario 11
Scenario 12
Female
Male

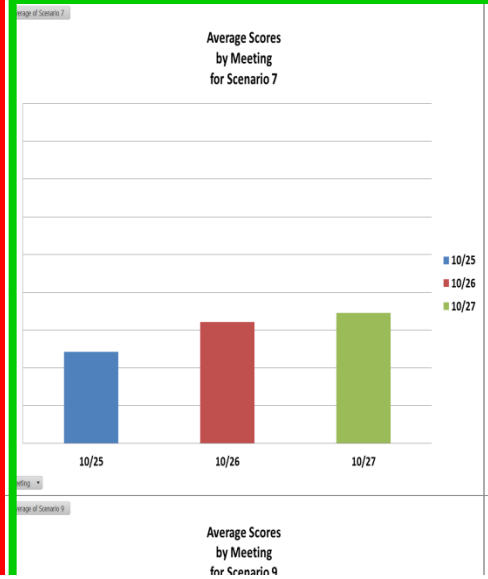
Where do you live?
For October 25th,26th,27th, 2010

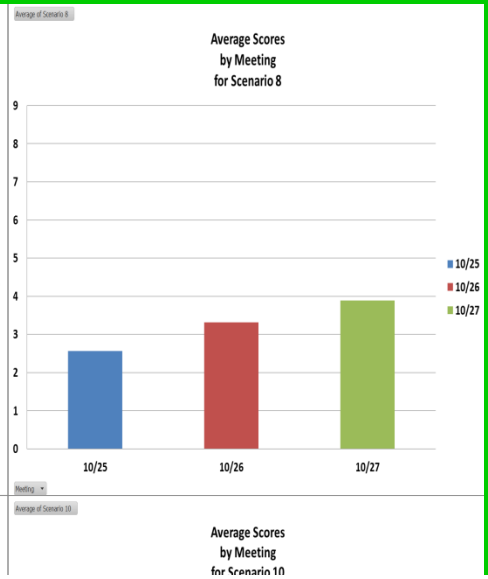


Does the large number of participants from "other" bias the results in one direction or the other?

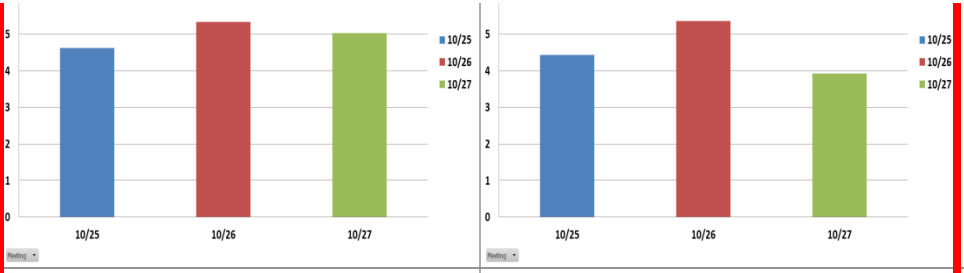

Scenario Scores
by Residence
Ballard Co participants tend
to favor more industrial
land uses than other residents
9
8
7
6
5
4
3
2
1
0
Scenario 1
Scenario 2
Scenario 3
Scenario 4
Scenario 5
Scenario 6
Scenario 7
Scenario 8
Scenario 9
Scenario 10
Scenario 11
Scenario 12
Ballard Co
McCracken Co
Near PGDP
Other

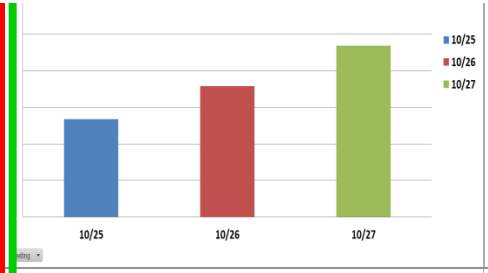


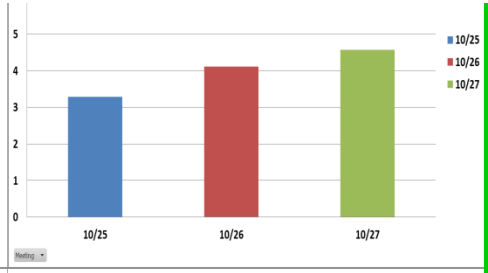


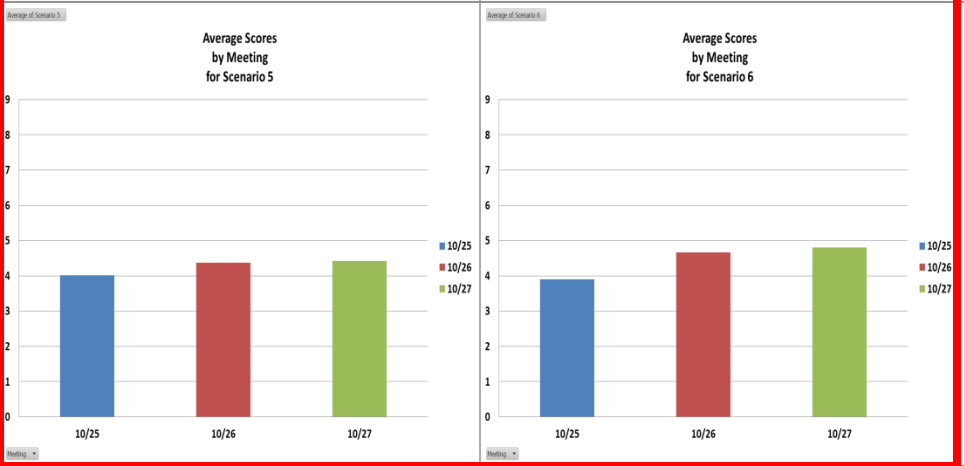


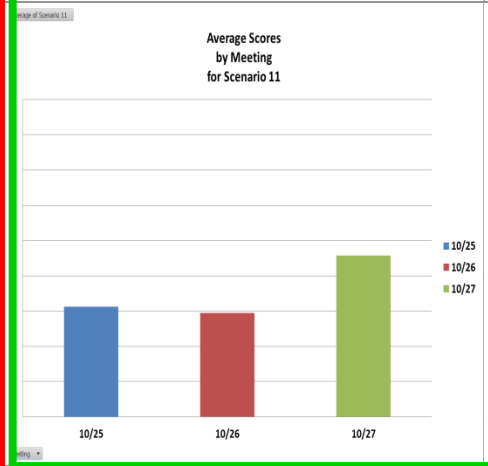
While numerically different, the scores at each meeting site tended to track well with each other – this is especially true of scenarios 1 and 12.

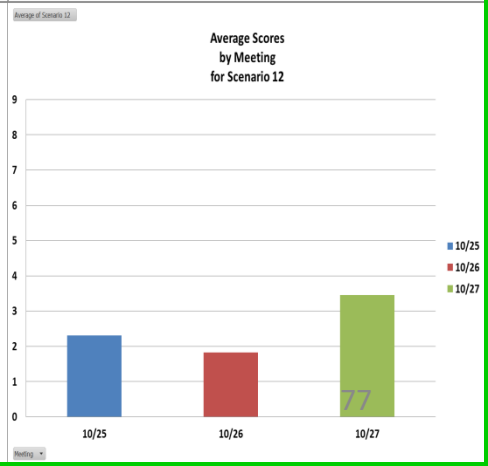




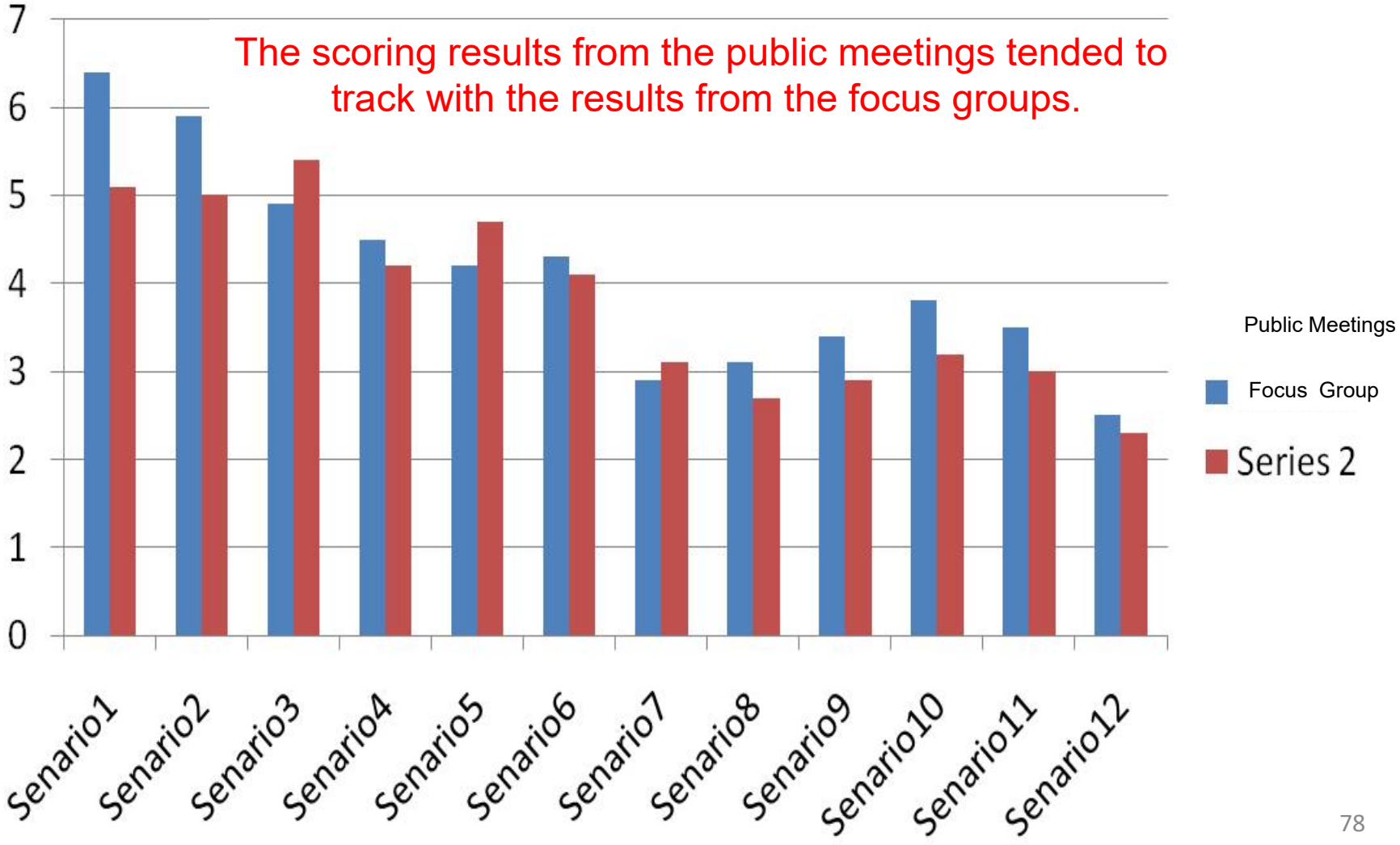




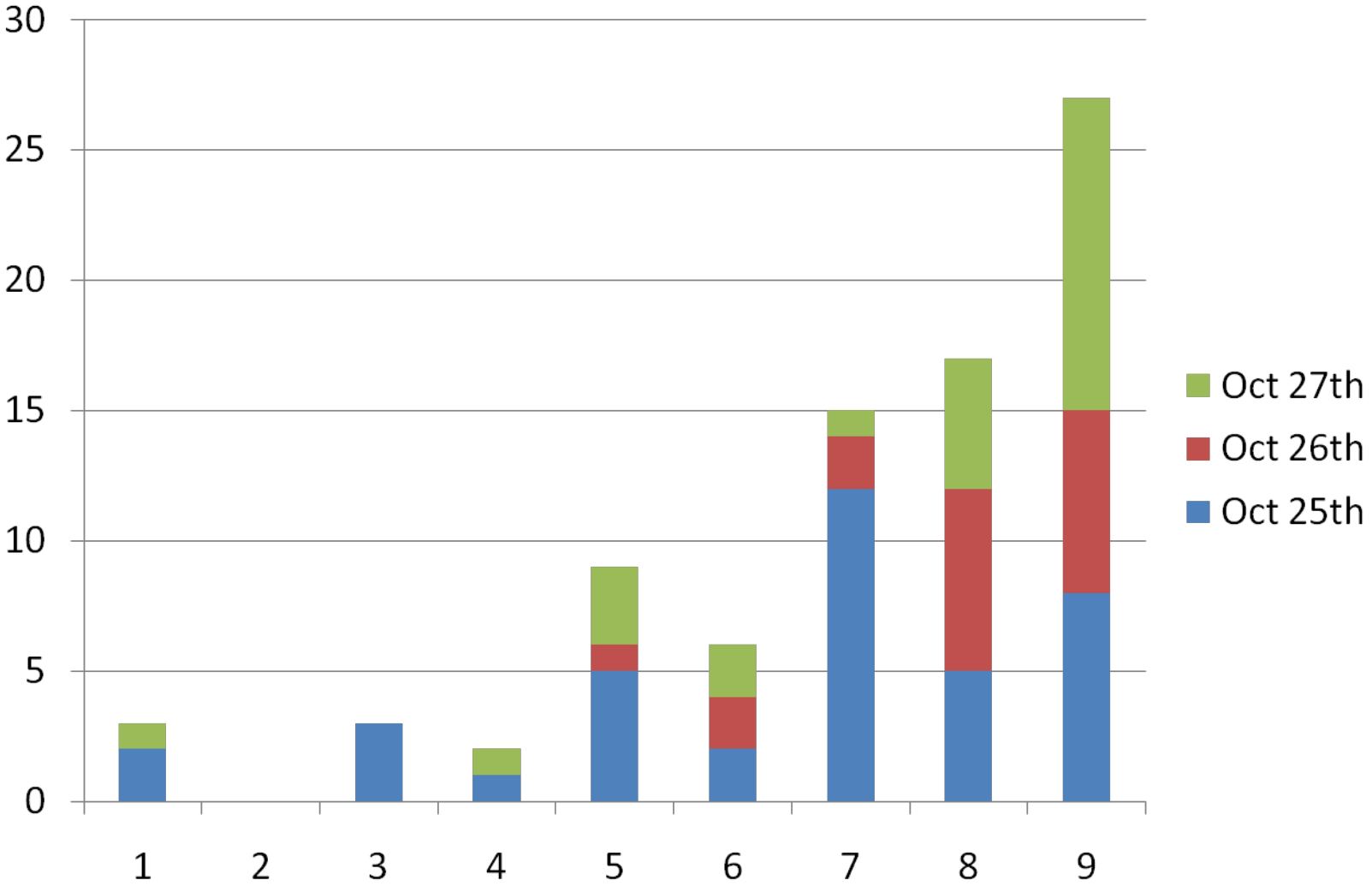




Focus Group/Public Meeting Comparison



Process Satisfaction Scoring for October 25th,26th,27th, 2010



Project Accomplishments

- Developed an effective process for public engagement that integrates:
  - Community Based-Participatory Communication
    - Basis for qualitative analysis
      - Unique use of visual instruments for discussion facilitation
      - Provides framework for citizen ownership of process
      - Provides an effective methodology for solicitation of community values
  - Structured Public Involvement
    - Basis for quantitative analysis
      - Use of computer visualizations for composite analysis of complex multi-faceted issues
      - Public empowerment through anonymous use of keypads
      - Public accountability through real-time process evaluation
      - The ability to demographically and anonymously measure who is in the room, and to track the varying pattern of their preferences

Project Accomplishments

- Developed an effective process for public engagement that:
  - Assesses and incorporates community values
  - Fosters community trust by providing accountability and transparency:
    - Stakeholder Pilot Group
    - Real-time results via key pads
    - Arnstein Ladder
  - Provides equal voice to all participants
    - Anonymous keypads
- Developed a process that has applicability to future DOE public engagement opportunities

Project Accomplishments

- Identified the diverse stakeholder groups
- Identified and documented community:
  - Values
  - Concerns
  - Data needs
  - Trusted data sources
- Documented community experiences and expectations with public engagement process
  - Community does not expect full citizen control
  - Present expectations may be influenced by past experiences

Project Accomplishments

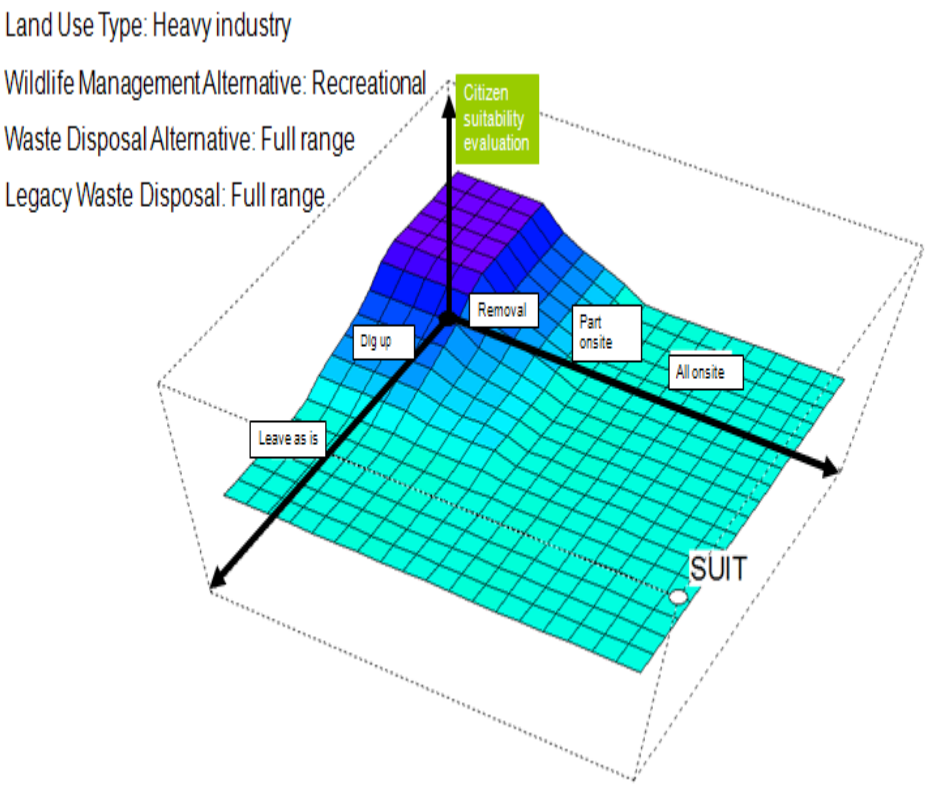
- Assembled a significant amount of relevant project information into a single repository and published through www.paducahvision.com
  - Informational narrative summaries
  - FAQ
  - Document database
  - Computer generated scenario visualizations
- Documented community preferences with regard to a range of possible future visions
  - Quantitatively
  - Qualitatively

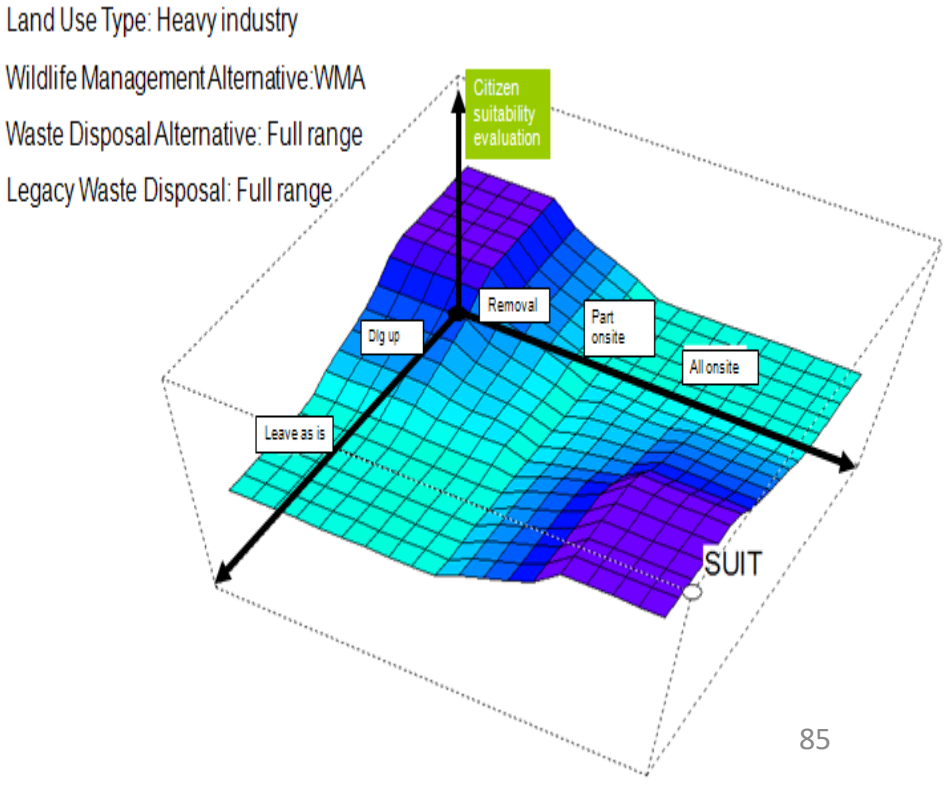
General land use Findings

- Of the range of six major possible land use options, the industrial land use options scored higher than the non-industrial land use options.
  - While more participants supported a nuclear industry option than opposed it, it also received very strong opposition from at least 20% of the participants – although the heavy industry land use actually received even more strong opposition.
  - The light industry land use option received the lowest average score among the industrial land use options, but it also received the least opposition
  - Among the non industrial land use options, the expanded wildlife management option received the most favorable response, although only marginally better than the other two: structured recreational and institutional controls.

General land use Findings

- Based on the data collected to date, it would appear that the majority of the respondents oppose the construction of any structured recreational facilities within the existing WKWMA
- Based on the data collected to date, it would appear that a large number of the respondents favor removal of all of the burial grounds
  - However, this can be somewhat influenced by the actual land use





General land use Findings

- To a slightly lesser extent, a large number of respondents also oppose the construction of a new waste disposal facility on site:
  - Based on environmental concerns
  - Based on future development concerns

  however there are some notable exceptions:
  - USEC employees
    - (keeping waste on-site insures jobs)
  - WKWMA users
    - (waste keeps other competing interest away)
  - Some environmentalists
    - (unethical to ship our waste to others)

General land use Findings

- The solicitation of additional scenarios from the public produced an additional land use scenario that received average scores greater than the best score (6.4) of any of the 6 original land uses:
  - Research Facility
    - Alternative Energy Research Center (6.5)
    - Remediation Research Center Combined with Power Plant (6.9)
    - Remediation Research Facility (7.2)
    - Federal Lab to Test Cleanup (7.1)
- Notably, the research facility was suggested independently at all three public scoring meetings
- In general, this land use also received very little opposition
- Supports similar previous CAB recommendations

Possible Study Limitations

- Sample Population Size Concerns
  - Public scenario meetings (103)
- Sample Population Concerns
  - Demographic hole (30-40 year olds)
  - Low participation by Water Policy Residents
- "Self-selection" by the participants
  - Participants were those who had the time/interest/ability/trust in the process to participate and, therefore, may or may not be truly representative of the actual population.

Possible Study Limitations

- Length of the study (history/maturation issues)
  - Ongoing DOE WDA meetings
  - University of Louisville Worker Epidemiological Study was published between focus groups and public meetings
- CaVE Analysis revealed complex and non-normal preference frequency distributions
  - Additional datasets needed to verify distributions or refine model results

Potential Next Steps

- Increase Sample Population
  - Conduct additional focused meetings
    - Water Policy Residents
    - Civic Clubs and Other Local Organization Meetings
  - Website
    - Provide scenarios with audio explanation
    - Provide opportunity for online voting
      - Have the technology to limit one per IP address and to identify geographic origin of respondent
- Update study results online
- Both of these can be done over the next few months in a relatively cost-effective way.

General Public Engagement Findings

- The community has a significant level of distrust of DOE:
  - Historical secrecy
    - Breeds urban legends
  - Past environmental practices
    - ATSDR Report
  - Perceptions of health impacts
    - NIOSH Study, newspaper and magazine articles
  - Perceptions that past community engagement activities are focused on regulatory process requirements rather than sincere attempts to listen to public
    - Possible perception that issues are too complex for citizens to understand
    - Negative experiences with public involvement, fear of losing control
    - Lack of an effective strategy to truly involve the public

General Public Engagement Findings

- The team found that the overwhelming majority of stakeholders did not feel the CAB represented their interests.
  - In one case, the research team encountered an elected official who had never even
- This is an important finding in light of DOE's ongoing efforts to increase public participation in their decision-makiing process.

General Public Engagement Findings

- This is consistent with the findings of Battelle's 2003 Report "An Evaluation of DOE-EM Public Participation Programs"
  - Interviewees "who expressed concern that community interests were not being taken into account and that a combination of an inattentive public and an insufficiently aggressive public awareness and involvement effort was resulting in a civic failure."
  - "Some persons expressed concern that DOE may be moving toward a strategy of "one-stop shopping" through the advisory boards, overlooking the need to reach out to, provide opportunities for, and take into account, the interests of less- involved citizens. At every site, respondents emphasized that the boards are not a substitute for the public."

General Public Engagement Findings

- These findings are perhaps not surprising given the following possible complicating factors:
  - Possible perception that issues are too complex for "ordinary" citizens to understand
  - Negative experiences with public involvement
  - Fear of losing control of the process
  - Lack of public turnout for public meetings
  - Lack of an effective strategy to truly involve the public
- All of which can create significant barriers in trying to implement the relevant recommendations of the "Politics of Cleanup" Report which was specified as a roadmap for this project to follow.

Politics of Cleanup Recommendations

- Recommendation #1: All Parties Must Collaborate — The federal government, local governments, community members, state and federal agencies, and Congress must collaborate when developing the cleanup and future use vision for the site.
- Recommendation #5: Understand Community Values — To properly collaborate, the parties must work to understand the values of the community, and must work to incorporate such values into the planning process.

Politics of Cleanup Recommendations

- Recommendation #6: Education Is Essential — The parties must take the time to educate each other on the technical and policy issues underlying the cleanup and to commit staff resources to engage each other. Discussion, which need to take place throughout the process, must also include the question of technical risk and perceptions of risk, recognizing perceptions of risks posed do not always align with the technical risk.
  - *DOE and the regulators need to exert whatever time and effort it takes to educate the affected entities about the various issues involved in site cleanups.*
- Recommendation #14: Following the Minimum in the Law Is Not Enough — Minimum regulatory requirements are insufficient to support substantive public involvement; the parties must develop public involvement processes that are tailored to site-specific needs, recognizing that process is different from negotiations.
  - *A public involvement process for the sake of process will yield little positive results and will not serve to support a timely cleanup*

Policy Conclusion

- In conclusion, if the recommendations of the POC Report are to be fully achieved, Public Engagement can no longer be viewed as a single project, or an add-on to a larger project. It also cannot be viewed as a series of disjointed projects. Instead, it is our conviction that is must be both viewed and implemented as an ongoing, iterative, and evolving process that:
  - Involves the total community
  - Is tailored to local community
  - Incorporates community values
  - Fosters collaboration
  - Provides accountability and invokes trust
  - Continues to inform and educate stakeholders
  - Provides for an inclusive and truly democratic way for the concerns and preferences of the local citizens to be both heard and valued

Policy Conclusion

- In this context, we believe the results of this study should not be viewed as a means to an end (as significant as these initial insights of this study may be), but the first step in building a more effective process of public engagement.
- We believe that the methodologies that have been brought together in this project provide the tools and strategies to achieve such a goal.

Final Recommendations

- DOE should consider providing a formal response to the March 18, 2004 CAB recommendations which addressed several important issues related to a future vision for the site.
- DOE should examine the potential for use of the existing site in support of a research facility which focuses on energy and/or remediation technologies.
- In the short run, DOE should seek to integrate ongoing public engagement activities in a more coordinated manner (e.g. the Future Vision Study and the parallel public meetings on waste disposal alternatives). Failure to do so can create confusion and send mixed signals to the community.
- In the long run, DOE should consider adopting the methodologies that have been integrated in this study as a template for implementing a long-term public engagement process consistent with the recommendations of the POC Report and the policy conclusions of this study.