Optimizing the Allocation of LWCF Funding

An Inter-Divisional Proposal

Precepts

- Optimal allocation of funding entails systematic accounting of benefits and costs.
- LAPS allows us to systematically account for conservation benefits of land acquisition.
- We do not systematically account for land acquisition costs.
- Recent developments call for optimizing land acquisition funding, most notably by systematically accounting for costs.
  - Sound science.
  - Administration guidance.

Sound Science (examples)

- Ando, A., J. Camm, S. Polasky, and A. Solow. 1998. Species distributions, land values, and efficient conservation. *Science* 279:2126-2128.
- Balmford, A., K. J. Gaston, and A. S. L. Rodrigues. 2000. Integrating costs of conservation into international priority setting. *Conservation Biology* 14:597–605.
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- Messer, K. D. 2006. The conservation benefits of cost-effective land acquisition: A case study in Maryland. *Journal of Environmental Management* 79:305-315.
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- Perhans, K., C. Kindstrand, M. Boman, L. B. Djupström, L. Gustafsson, L. Mattsson, L. M. Schroeder, J. Weslien, and S. Wikberg. 2008. Conservation goals and the relative importance of costs and benefits in reserve selection. *Society for Conservation Biology* 22:1331-1339.
- Polasky, S., J. D. Camm, and B. Garber-Yonts. 2001. Selecting biological reserves cost-effectively: An application to terrestrial vertebrate conservation in Oregon. *Land Economics* 77:68-78.

Sound Science (longer list)

- Ando, A., J. Camm, S. Polasky, and A. Solow. 1998. Species distributions, land values, and efficient conservation. *Science* 279:2126-2128.
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- Bode, M., K. A. Wilson, T. M. Brooks, W. R. Turner, R. A. Mittermeier, M. F. McBride, E. C. Underwood, and H. P. Possingham. 2008. Cost-effective global conservation spending is robust to taxonomic group. *Proceedings of the National Academy of Science* 105:6498-6501. .
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Scientific Consensus

- Fish and wildlife conservation is maximized when allocation of funding is optimized.
- Four basic steps in optimizing:
  - Estimate benefits.
  - Estimate costs.
  - Divide benefits by costs.
  - Prioritize projects based on benefit:cost ratio.
- Importance of optimization increases as allocations decline.

Administration Guidance

- 1992-2011 – Circular No. A-94 (revised): "Benefit-cost analysis is recommended as the technique to use in… government programs or projects."
- 2009 – Executive Order 13514: "Consider environmental measures as well as economic and social benefits and costs in evaluating projects and activities…"
- 2011 – White House report, *Sustaining Environmental Capital: Protecting Society and the Economy*
  - "…increase the positive impact of conservation expenditures by giving highest priority to those expenditures that maximize the conservation benefits gained for each dollar invested" (p.47).
  - "Even when cost is considered, it is often only one variable rather than the denominator in a cost-effectiveness calculation…which results in a flawed assessment" (p.49).
  - "For the short term, agencies should begin by focusing on existing programs…" (p.54).

Optimization, LAPS, and LWCF Allocation

Project A

100 acres

LAPS = 650

Cost per Acre = $1,000

Project B

100 acres

LAPS = 705

Cost per Acre = $10,000

How do we prioritize these projects?

Project C

100 acres

LAPS = 700

Cost per Acre = $1,000

Project D

100 acres

LAPS = 675

Cost per Acre = $5,000

Via LAPS

Rank	Project Name	LAPS Score
1	Project B	705
2	Project C	700
3	Project D	675
4	Project A	650

Optimization

LAPS (Benefit)
Cost per Acre

Project A

650/1000=

0.65

LAPS = 650

Cost per Acre = $1,000

Project B

700/10,000=

0.07

LAPS = 705

Cost per Acre = $10,000

Project C

700/1000=

0.70

LAPS = 700

Cost per Acre = $1,000

Project D

0.14

LAPS = 675

Cost per Acre = $5,000

Optimized Ranking

Rank	Project Name	B/CPA score	LAPS score
1	Project C	0.70	700
2	Project A	0.65	650
3	Project D	0.14	675
4	Project B	0.07	705

What can we acquire with $1 million?

LAPS Ranking

Project	Total Cost
B	1,000,000
C	100,000
D	500,000
A	100,000

Optimized Ranking

Project	Total Cost
C	100,000
A	100,000
D	500,000
B	1,000,000

What can we acquire with $1 million?

LAPS Ranking

- 1 project
- 100 acres
- Benefit =

705

Optimized Ranking

- 3.3 projects
- 330 acres
- Benefit =

700 “+” 650 “+”
675 “+” (.3)*705

Example

For FY 2010, the following two Region 5 acquisitions were proposed:

Project A

Prime Hook NWR

LAPS = 508

Cost per Acre = $9,259

Project B

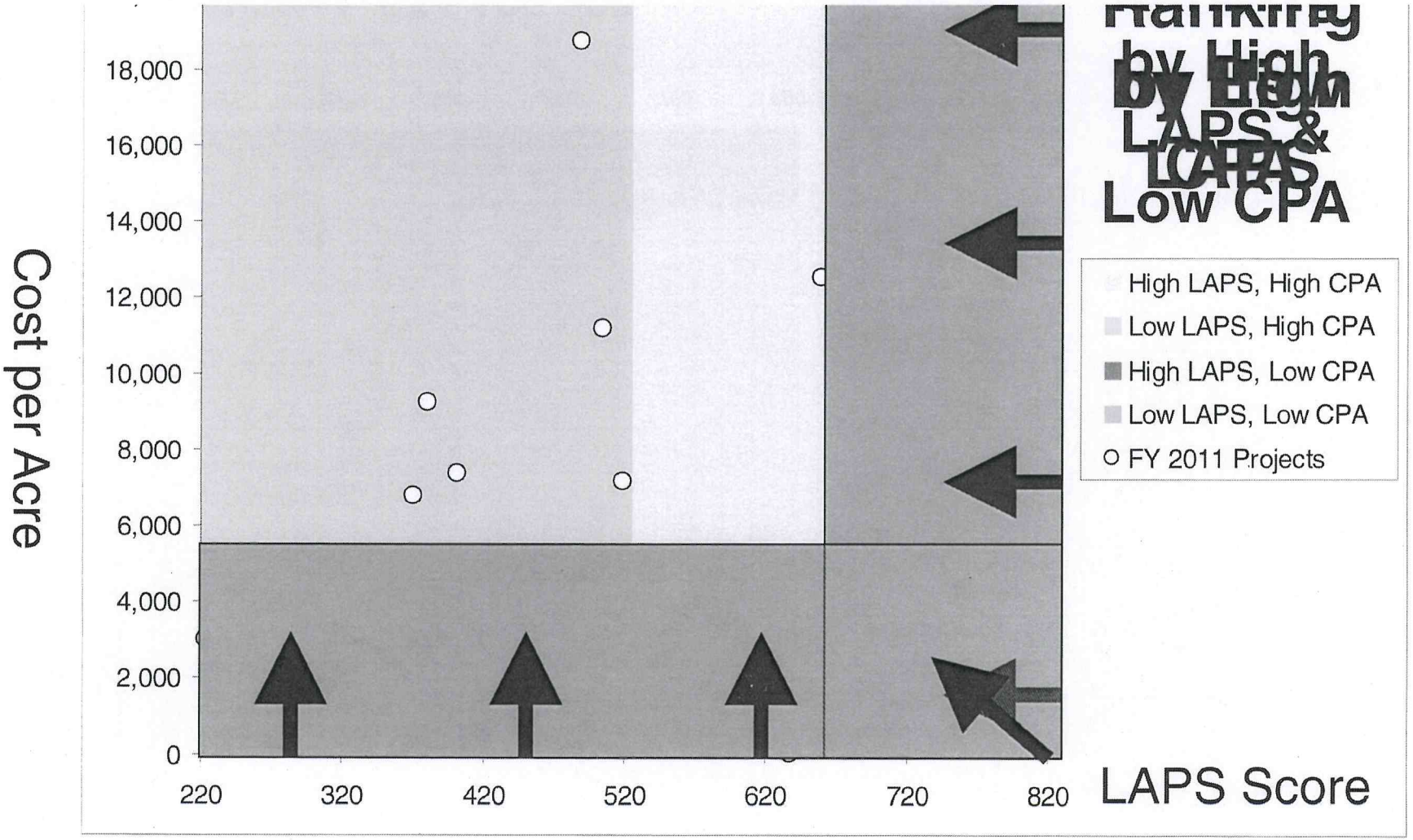
Cape May NWR

LAPS = 502

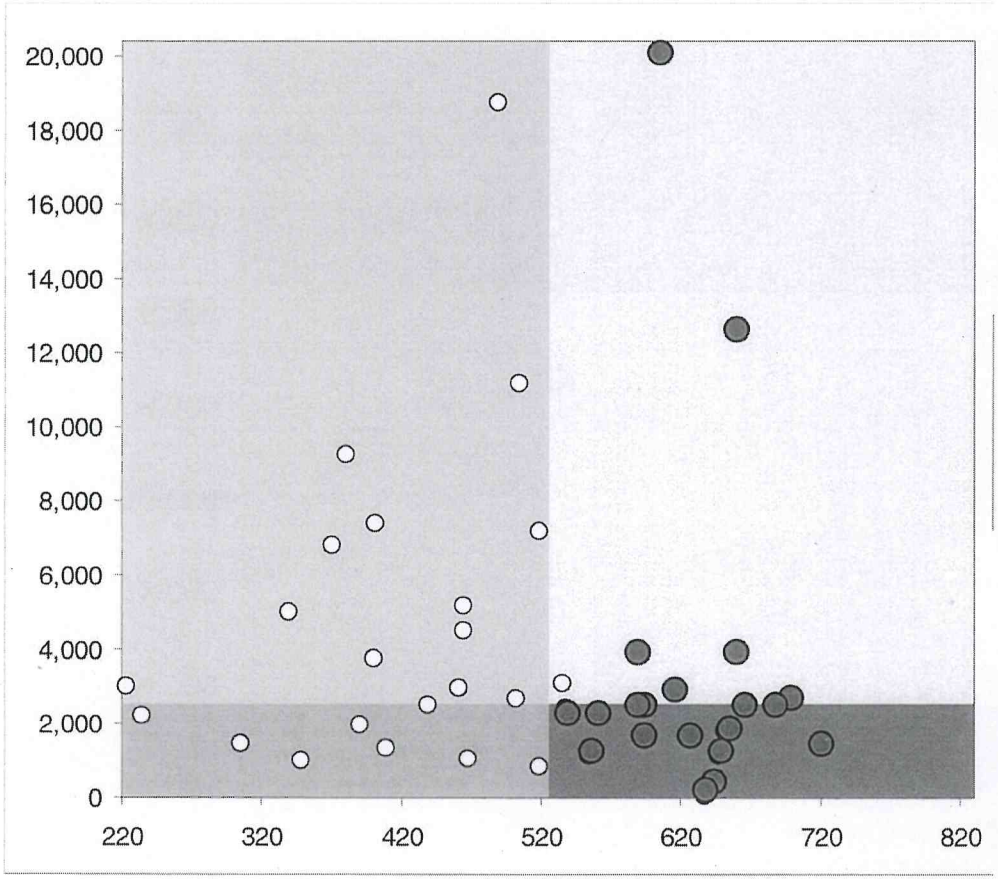
Cost per Acre = $35,714

FY 2011 Projects Distribution

- Adjusted for easements, assuming 40-60% cost of fee title



Top 20 - LAPS

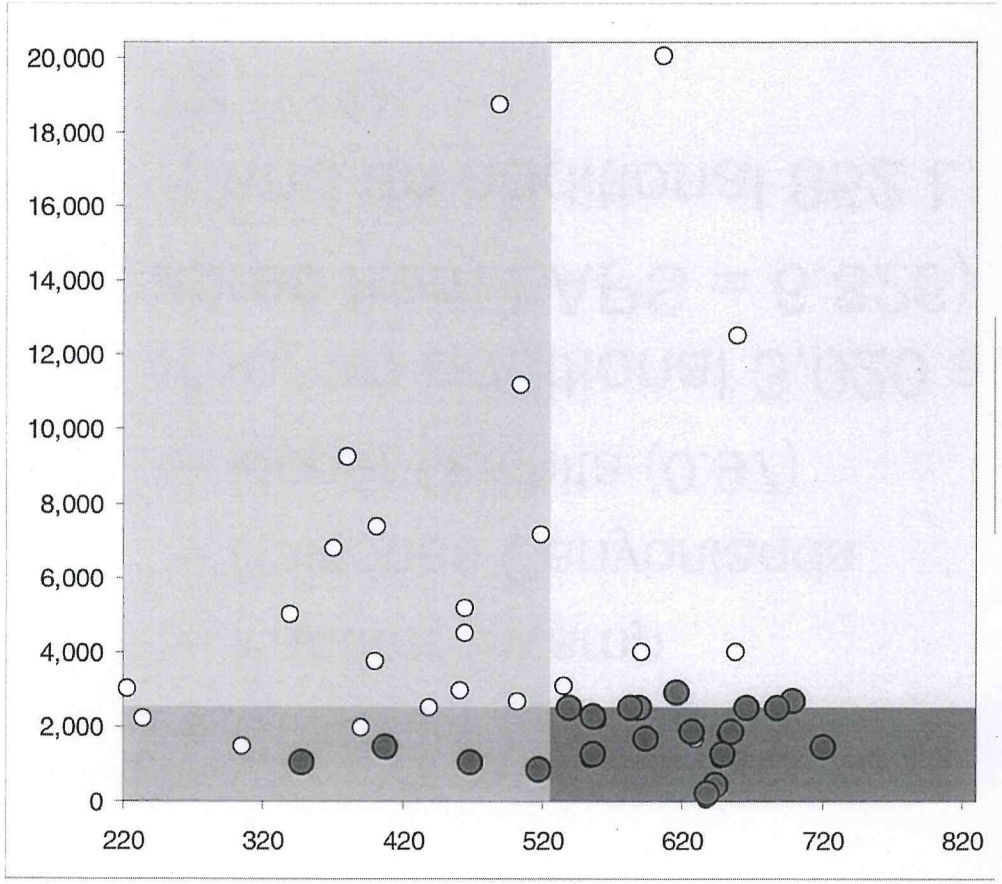


Total Cost: $74,125,167

Total Acres: 93,787

St. Marks NWR
Silvio O. Conte NWR
Cache River NWR
Laguna Atascosa NWR
Savannah NWR
Upper Mississippi River NW&FR
Lower Rio Grande Valley NWR
Dakota Tallgrass Prairie WMA
North Dakota WMA
Alaska Refuges (inc. Yukon Delta NWR)
Blackwater NWR
Waccamaw NWR
San Joaquin River NWR
Northern Tallgrass Prairie NWR
Big Muddy NF&WR
Chickasaw NWR
Cypress Creek NWR
San Bernard-Austin's Woods
Rocky Mountain Front CA
Grasslands WMA

Optimized Top 20



Total Cost: $70,083,500
(-$4,041,667)

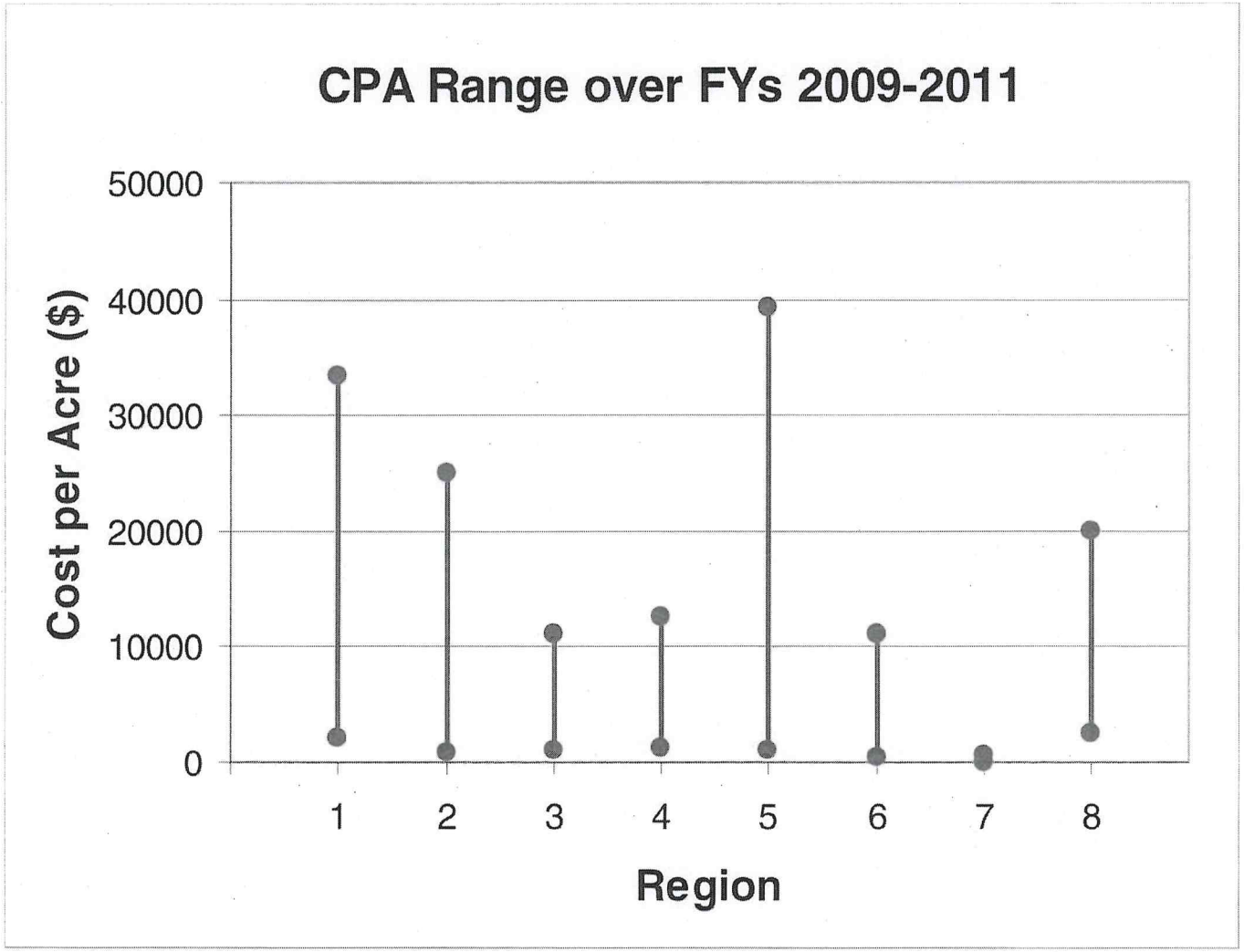
Total Acres: 97,593 *(+3,806)*

Alaska Refuges (inc. Yukon Delta NWR)
North Dakota WMA
Trinity River NWR
Dakota Tallgrass Prairie WMA
St. Marks NWR
Rocky Mountain Front CA
Ozark Plateau NWR
Blackwater NWR
Northern Tallgrass Prairie NWR
Lower Rio Grande Valley NWR
Lake Umbagog NWR
Red River NWR
Cache River NWR
Laguna Atascosa NWR
Silvio O. Conte NWR
San Bernard-Austin's Woods
Chickasaw NWR
Cypress Creek NWR
Grasslands WMA
Waccamaw NWR

Some Results of Optimizing

- $4,000,000 cost savings will cover the next 3.97 project requests on the optimized list…
  - Cokeville Meadows
  - Panther Swamp
  - Balcones Canyonlands
  - Upper Ouchita (0.97)
- …for an additional 3,020 acres (total additional acres from LAPS = 6,826)…
- …and an additional 852 LAPS points (13,386 - 12,534).

Will regions with high CPAs be excluded?



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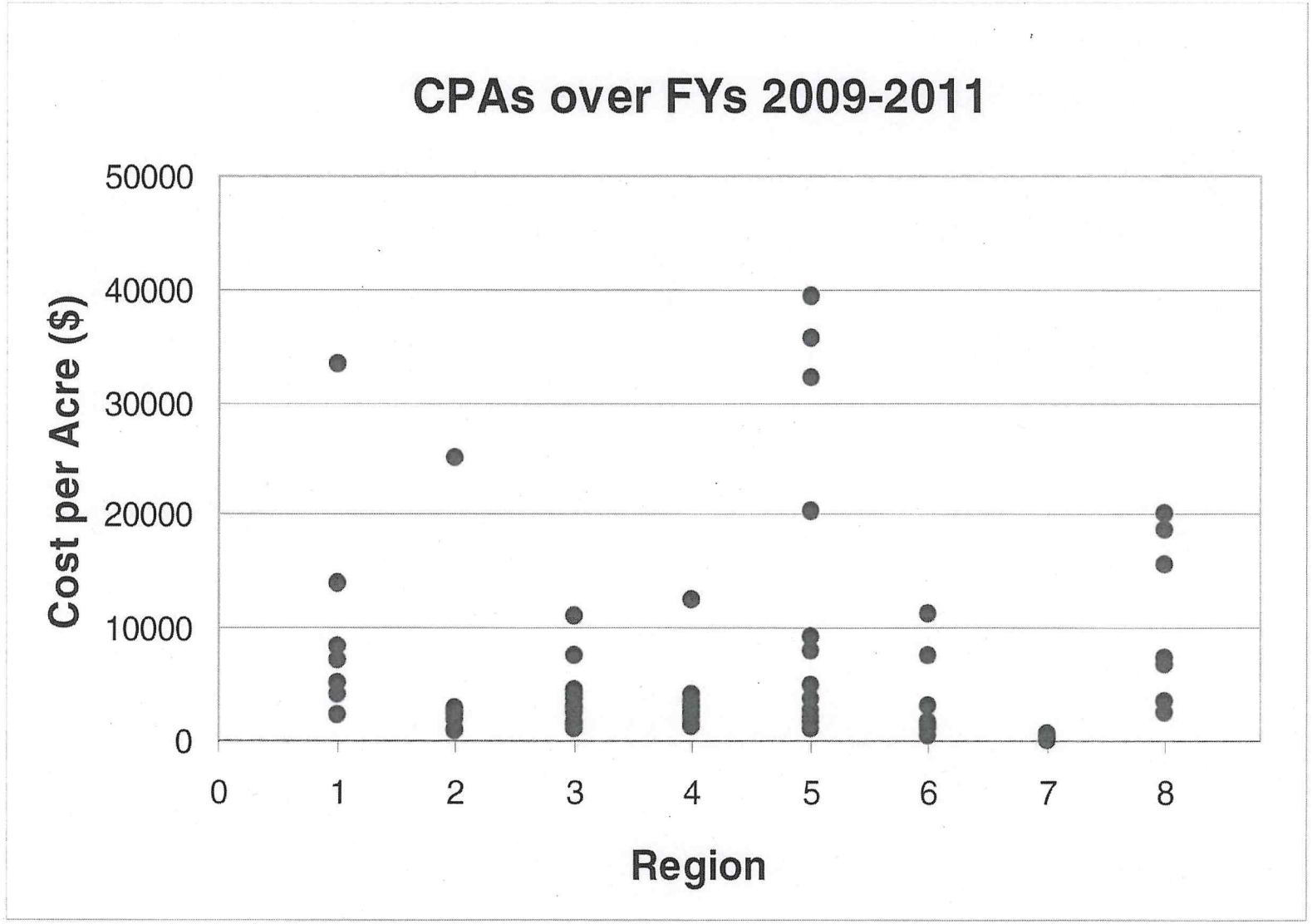

Nothing Ruled Out

- Approximately 70% of LWCF projects determined via ranking (currently using LAPS).
- 20% Regional priorities.
- 5% Director priorities.
- 5% other reasons.

Inter-Divisional Proposal

- Rank LWCF projects by optimizing (i.e., using LAPS score/cost per acre).
- Highlight optimization in annual reports.
  - Refuge System *Annual Report of Lands.*
  - Executive Order 13514 annual report.
  - *Sustaining Environmental Capital* annual report.
- Continuously improve optimization.
  - Formalize optimization in revised strategic growth policy.
  - Continue with ongoing LAPS revision.
  - Consistent inclusion of land costs in project descriptions.
  - Fine-tune easement/fee ratios.
  - Explore additional cost considerations.
    - Planning as well as ranking.
    - Non-acquisition costs.

Benefits to Refuge System

- Optimal allocation of LWCF funds.
  - Maximum return on investment.
  - Maximum possible conservation.
- Positive public and intergovernmental relations.
  - Proactive use of sound science.
  - Prompt adherence to Administration guidance.
- Increased potential for future allocations.