Susitna Dam Projects: Cost, Economics, and Financing

Seminar on the Development of Large Hydroelectric Projects with a Focus on the Susitna Project

presented to

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HDR Alaska

northern economics inc.

DTA
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Workshop Agenda

- Previous Cost Estimates
- Power and Energy Markets
- Economics and Fuel Prices
- Financing – then and now
- Alternatives to Susitna
- Questions and Answers

1985 FERC Application Construction Cost Estimate

	Cost (Millions of 1985 $)			
Category	**Watana (Stage I)**	**Devil Canyon (Stage II)**	**Watana (Stage III)**	**Total**
Production Plant	1,422	990	852	3,264
Transmission Plant	460	64	135	659
General Plant	5	6	1	12
Indirect Costs	349	180	184	713
Subtotal	2,236	1,240	1,172	4,648
Overhead	446	154	147	747
Total Construction Cost	2,682	1,394	1,319	5,395
Economic Analysis (0 percent inflation; 3.5 real interest)				
Escalation	-	-		-
AFDC*	399	236	146	747
Total Economic Cost	3,081	1,630	1,465	6,176
Financial Analysis (5.5 percent inflation; 9.0 percent interest)				
Escalation	1,863	1,935	3,544	7,342
AFDC*	1,879	1,576	1,351	4,806
TOTAL Financial Cost	6,424	4,905	6,214	17,543

*AFDC = Allowance for Funds used During Construction

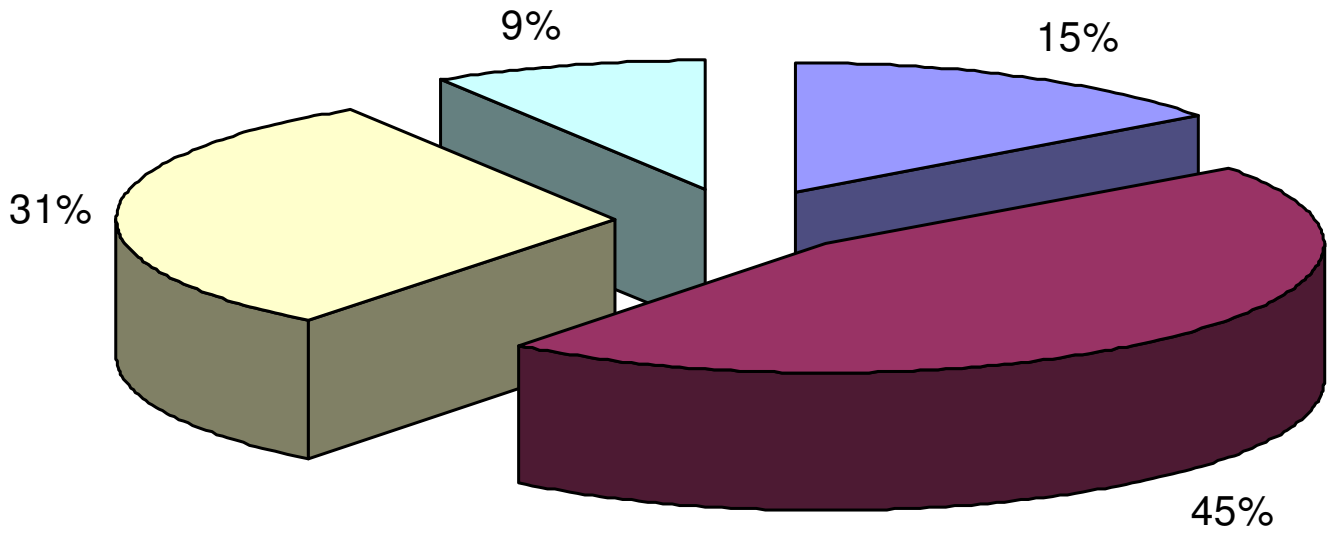
Statewide Electrical Power Markets

Net Electrical Generation in 2001 (GWh)*

Statewide Utilities	5,077	(2621 Railbelt)
Alaska Industries	2,596	(1805 North Slope)
Military	360	
Total Statewide	8,033	

Source: ISER, 2003

Alaska Energy Market – 2001(Btu's)



Source: ISER, 2003

Economics - 1985

- 9% interest rates and 5.5% inflation moderating in future (3.5% real)
- Cost of crude oil (per barrel 1985$)
  - ~$27 in 1985; projected 2010 price $51 (1985$)
  - CPI deflator suggests price of ~ $104 in 2008
  - Average for 2008 to date ~ $108
- Cost of natural gas (1985 $ per MMBtu)
  - ~$2 in 1985; projected 2010 price $5.37 (1985$)
  - CPI deflator suggests prices of ~ $11 in 2008
  - Average for 2008 to date $9.30

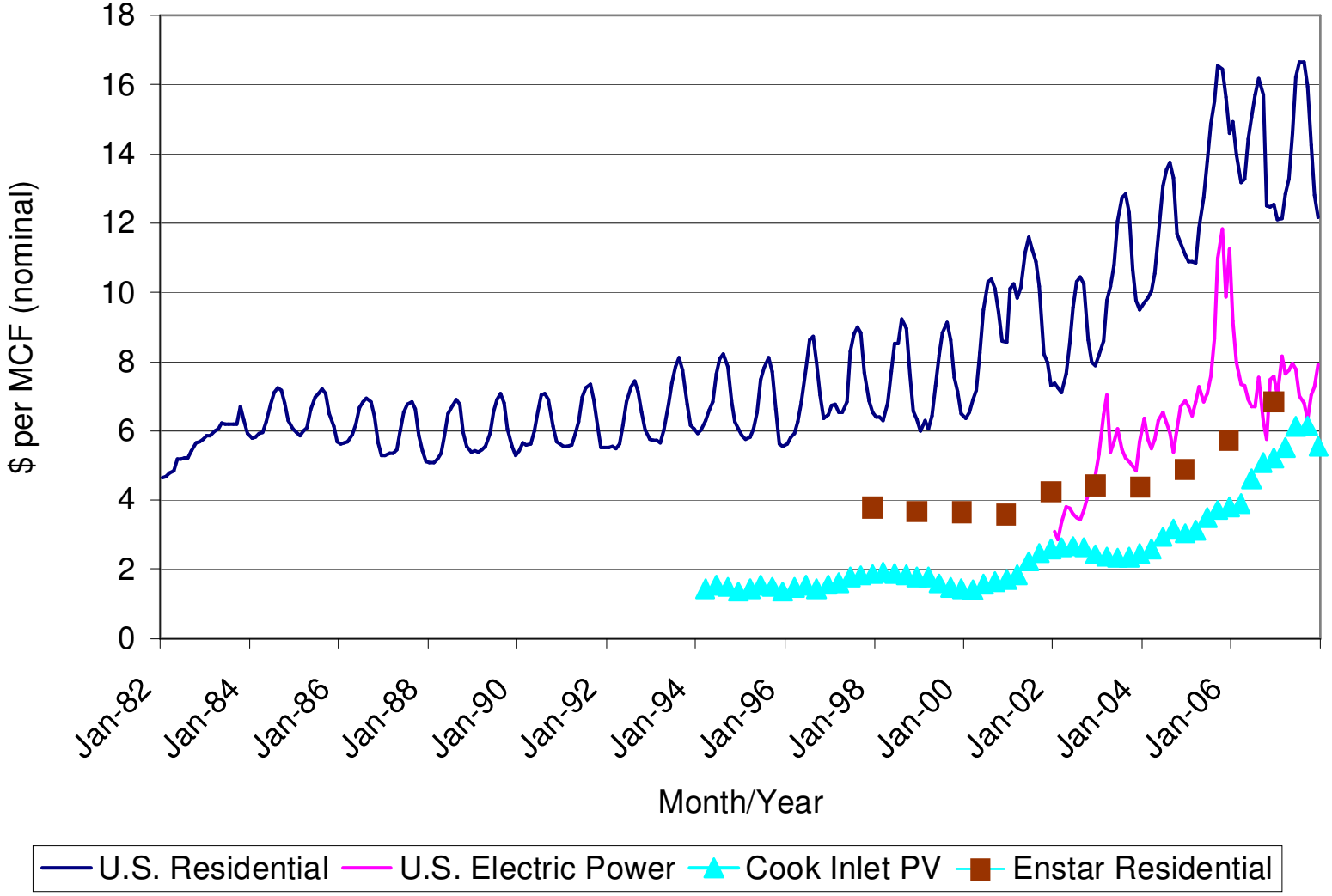
Economics - 2008

- Anticipated Global Recession
  - Lower interest rates near term?
  - Lower commodity prices
- Turmoil in Financial Markets
  - Higher interest rates in long term?
  - High inflation, or low inflation or deflation?
- Commodity Prices
  - Demand destruction from higher prices
  - Cost of new production higher than current prices?

Competing Fuel Prices

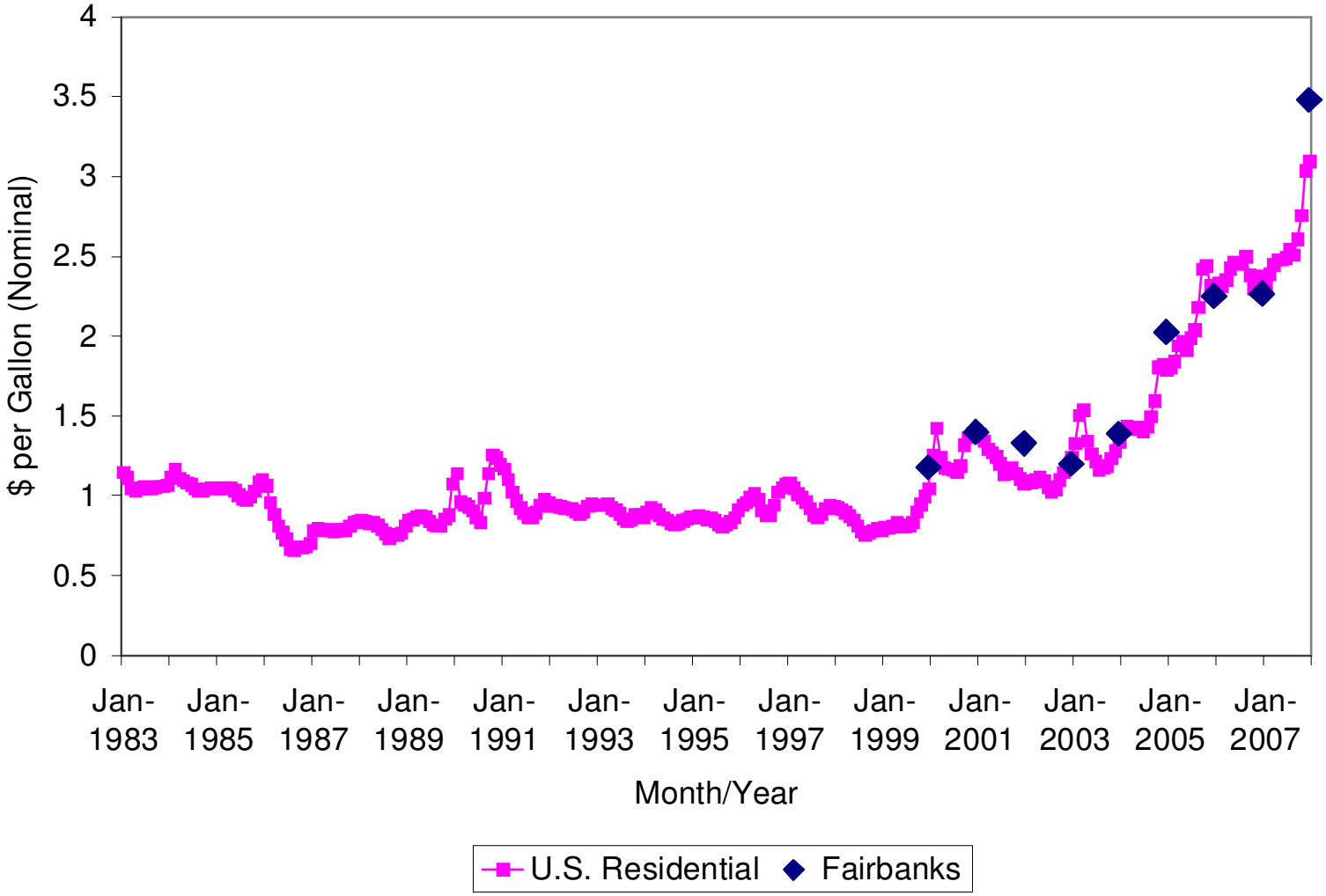
- Natural Gas
- Coal
- Heating Oil

Natural Gas Purchase Prices



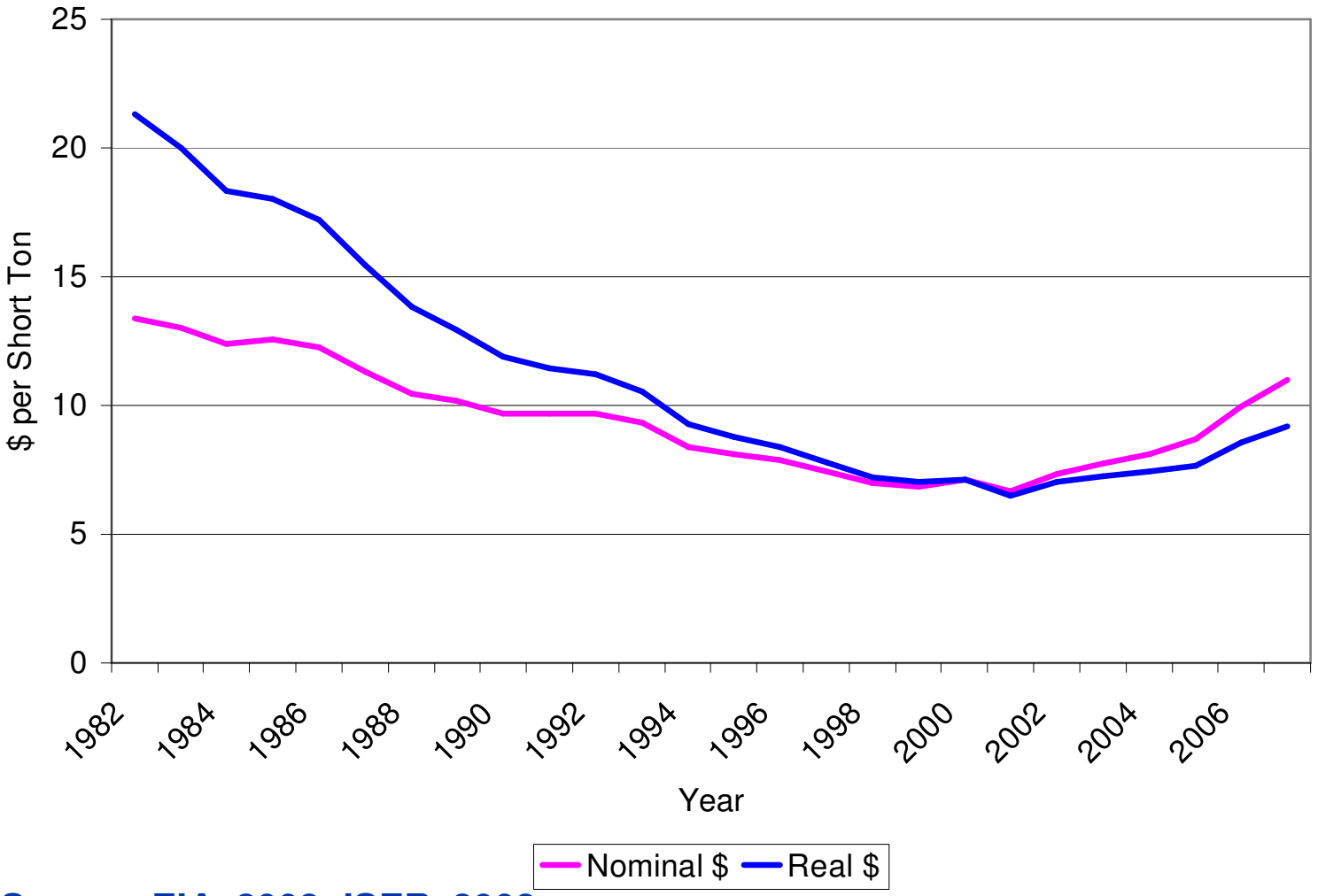
Source: EIA, 2008; DNR, 2008

Residential Fuel Oil Prices



Source: EIA, 2008; ISER, 2008

U.S. Subbituminous Coal Prices



Source: EIA, 2008; ISER, 2008

Financing Structure - 1985

- $9.1 billion in 1985$ – $20.5 billion in nominal $ (1986-2012 period)
- Tax-exempt (T-E) revenue bonds @ 9%
- 35 year term for bonds
- Rate stabilization during initial years
- Direct billing required to retain T-E status
- Financial restructuring of some Railbelt utilities – assumed to occur

Financing Structures - 2008

- Globally, large hydro projects are often financed by multilateral development banks and partners
- Public/private partnerships are more prevalent for major infrastructure projects where there are budgetary constraints
- Project finance requires offsetting risks
  - Financial restructuring of electric utilities may be required as part of project
  - Other risks (cost overruns, delays, performance, etc.) will need to be addressed

Financing (continued)

- Offsetting risks requires complex contractual and financing transactions and documents
- Future interest rates – uncertain but likely higher than in recent years
- Non-recourse loans may be more difficult to obtain for large projects
- Guarantees may be required in initial years

Questions and Answers