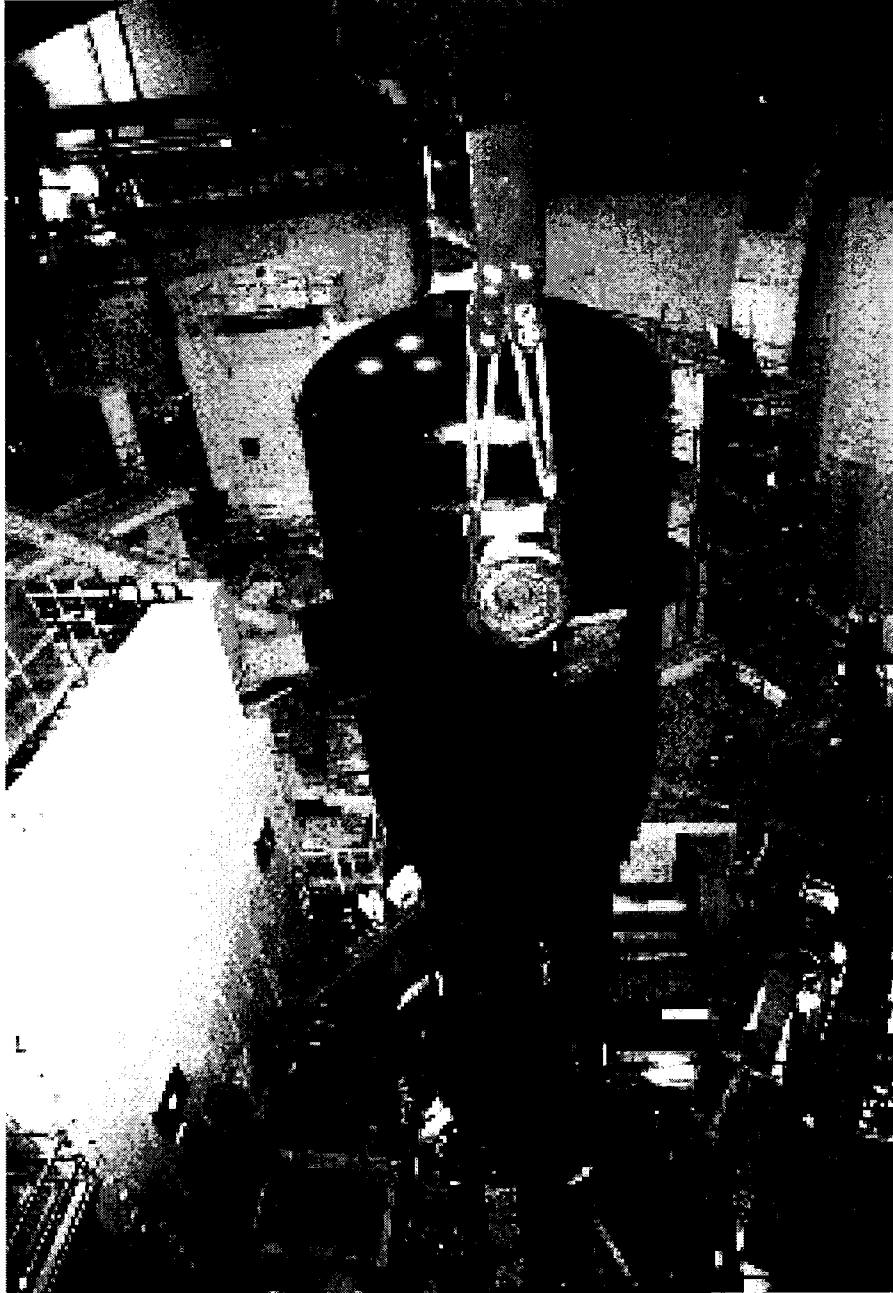


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GS STEAM GENERATOR REPLACEMENT DECISION ANALYSIS



**UPDATE FOR JIM AVERY
JUNE 3, 2003**

SONGS STEAM GENERATOR REPLACEMENT DECISION ANALYSIS

AGENDA

- Economic analysis alternatives
- Economic analysis methodology
- Replacement generation resources
- Transmission system improvements
- Economic analysis preliminary results
- Independent Assessment update
- Updated schedule information
- Potential next steps

ECONOMIC ANALYSIS ALTERNATIVES

ALTERNATIVE 1. REPLACE STEAM GENERATORS

- SGs will be replaced in 2009-10 as proposed by SCE.
- SONGS will continue to operate until 2022.
- SONGS generation produced by this alternative is the "Base Case" generation for comparison of alternatives.

ALTERNATIVE 2. DO NOT REPLACE STEAM GENERATORS

- SGs are not replaced.
- SONGS 2&3 will shut down in 2010 as predicted by SCE.
- SDG&E will purchase combined-cycle capacity to match Base Case generation beginning in 2011.
- Two transmission projects will be advanced to provide grid reliability in absence of SONGS. A portion of the cost of advancing these projects will allocated to SDG&E.

ALTERNATIVE 3. REPLACE STEAM GENERATORS - LIMIT PARTICIPATION

- SGs will be replaced in 2009-10 as proposed by SCE.
- SDG&E will invoke "Operating Impairment" provisions of the SONGS Operating Agreement.
- SDG&E's share of the SG replacement cost will be capped at \$50.25 M *.
- SDG&E's ownership share of SONGS 2&3 will be reduced by approximately 1.2% (27 MW reduction). *
- SCE will pay the difference (\$60.75 M) and their ownership share will be increased by 1.2%. *
- Thereafter, SDG&E's share of SONGS costs and generation will be based on its reduced ownership share of 18.8%.
- SDG&E will purchase simple-cycle capacity to match Base Case generation beginning in 2011.

* This assumes both units' SG degradation is considered a single operating impairment. Otherwise SDG&E's cost would be \$100.5 M and the ownership reduction would be negligible.

ALTERNATIVE 4. REDUCE PLANT OUTPUT TO PRESERVE STEAM GENERATORS

- SDG&E proposed this alternative and requested SCE to develop the economics for it.
- SCE responded that they consider this alternative to be infeasible:
 - SGs have already realized most of the benefit through previous temperature reductions.
 - Primary degradation mechanism (PWSCC) occurs above 600 °F.
 - With previous temperature reductions, 600 °F is exceeded only near the tube sheet.
 - Sleeving can be used to repair tubes near the tube sheet.
 - Therefore further temperature reduction will not extend SG life.

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ECONOMIC ANALYSIS METHODOLOGY

- Comparison of Alternatives 1-3 based on total cost to SDG&E customers for the energy produced (mill/kWh).
- All costs were determined by year for the period 2004-2022 and Present Valued to 2004\$.
- Resource Planning evaluated the costs of replacement generation resources for Alternatives 2&3.
- Transmission Planning evaluated the costs of transmission system improvements for Alternative 2.
- Business Planning & Budgets evaluated SONGS-related costs of Alternatives 1-3 using SCE's economic model and SDG&E-specific financial information.
- Business Planning & Budgets incorporated the cost of replacement generation and transmission system improvements into Alternative 2.
- Electric and Gas Procurement developed graphics to compare Alternatives 1-3.
 - SONGS Capital Expenditures (Alternatives 1-3)
 - SONGS Capital Cost (Alternatives 1-3)
 - SONGS O&M Cost (Alternatives 1-3)
 - SONGS Fuel Cost (Alternatives 1-3)
 - SONGS NDT Contributions (Alternatives 1-3)
 - SONGS Total Cost (Alternatives 1-3)
 - SONGS Generation (Alternatives 1-3)
 - SONGS Energy Cost (Alternatives 1-3)
 - Replacement Generation (Alternative 2-3)
 - Replacement Generation Costs (Alternatives 2-3)
 - Replacement Energy Costs (Alternatives 2-3)
 - Advancement of Transmission Improvements (Alternatives 2)
 - Total Energy Cost (Alternatives 1-3)
 - Summary of Alternative 1 Costs
 - Summary of Alternative 2 Costs
 - Summary of Alternative 3 Costs

REPLACEMENT GENERATION RESOURCES

RESOURCE PLANNING ASSUMPTIONS

- Analysis assumes "Balanced" resource plan will be followed:
 - Valley–Rainbow added in 2008.
 - Approx. 1,350 MW of new generation will be added in SDG&E service area by 2013.
 - All QF resources will remain in service.
 - Grid reliability criteria will be met through 2023.
- Gas prices (SoCal border):
 - \$4.53/MMBTU (2011) to \$6.81/MMBTU (2023).

ALTERNATIVE 1. REPLACE STEAM GENERATORS

- Base Case - No replacement generation needed.

ALTERNATIVE 2. DO NOT REPLACE STEAM GENERATORS

- Added 455 MW of combined-cycle unit in 2011:
 - Heat rate: 7,000 Btu/kWh.
 - Capital Cost: \$684/kW (2003 \$).
 - Annual Cost: \$97/kW-YR (2003\$ including O&M).

ALTERNATIVE 3. REPLACE STEAM GENERATORS - LIMIT PARTICIPATION

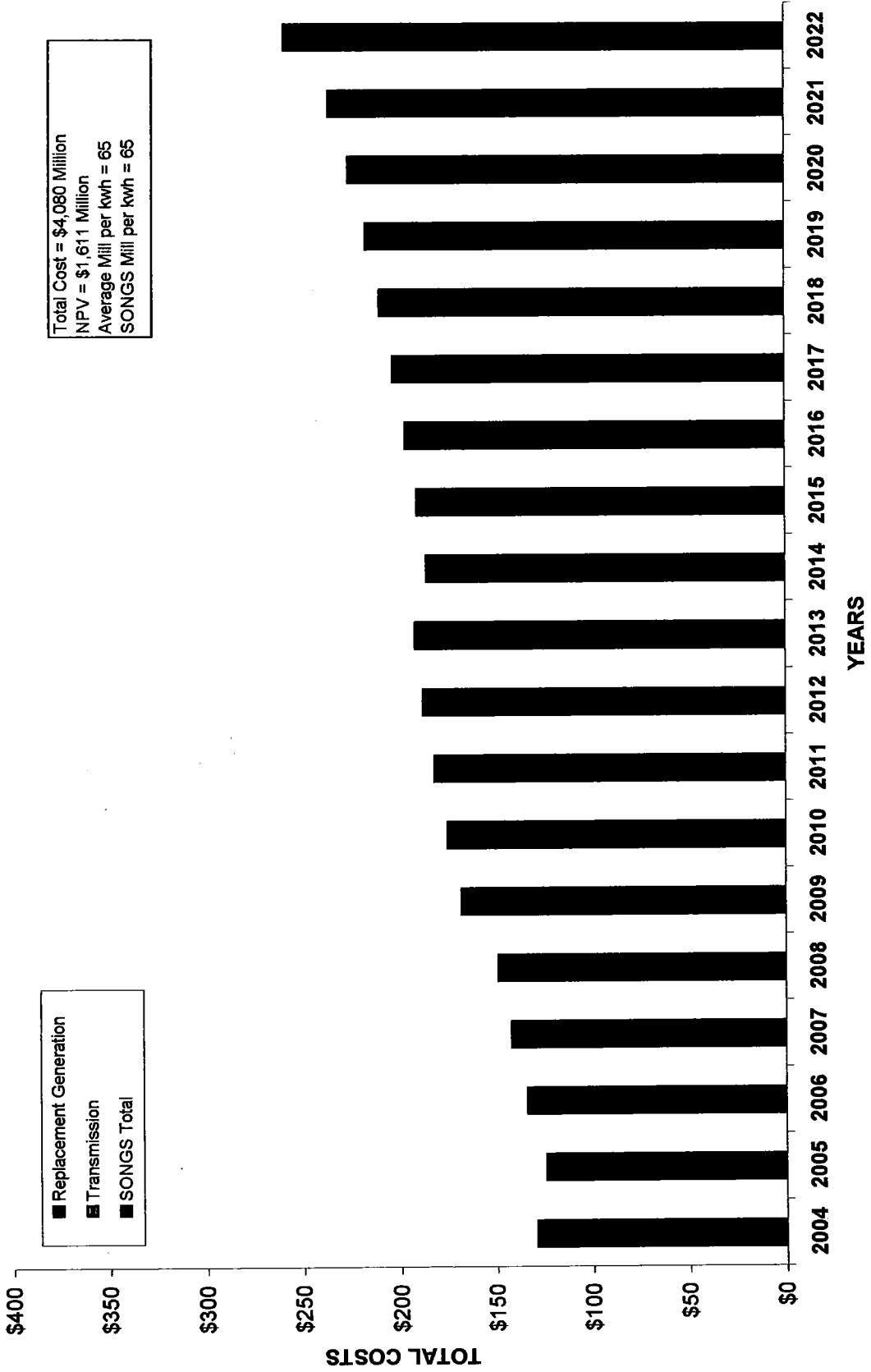
- Added 27 MW of combustion turbine in 2009:
 - Heat rate: 10,000 Btu/kWh.
 - Capital Cost: \$534/kW (2003 \$).
 - Annual cost: \$75/kW-YR (2003\$ including O&M).

TRANSMISSION SYSTEM IMPROVEMENTS

- Transmission simultaneous import limit reduced 400 MW with shutdown of second SONGS unit:
 - Advances Rainbow-Imperial Valley transmission line from 2022 to 2021 (in-service dates) if SONGS shuts down earlier (based on IRP assumptions).
 - Miscellaneous 230 kV line & voltage support in SCE & SDGE.
- More detailed joint SDG&E/SCE grid studies to be done by mid-July.

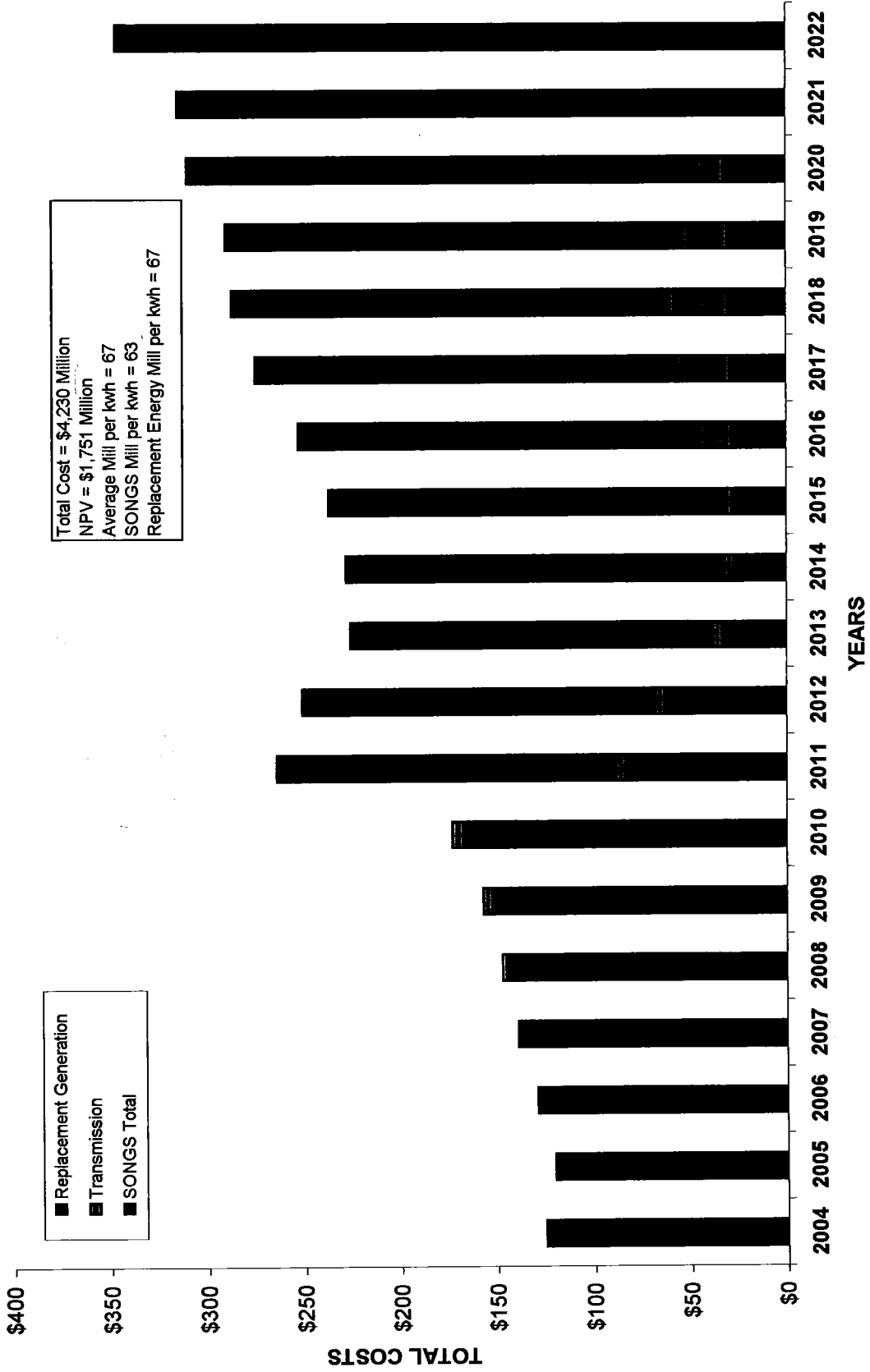
ECONOMIC ANALYSIS PRELIMINARY RESULTS

ALTERNATIVE #1: REPLACE STEAM GENERATORS \$ in Millions

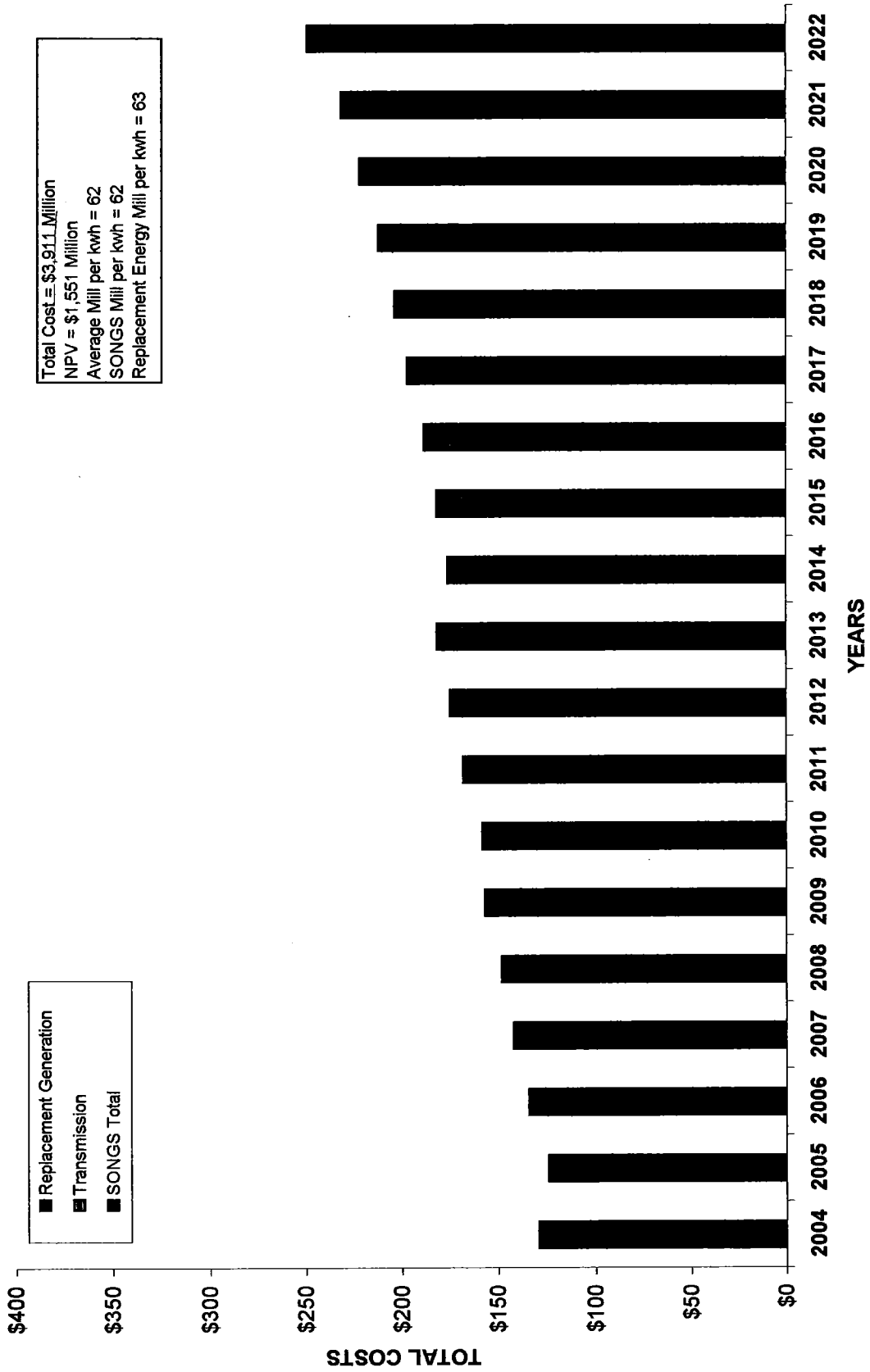


ALTERNATIVE #2: DO NOT REPLACE STEAM GENERATORS

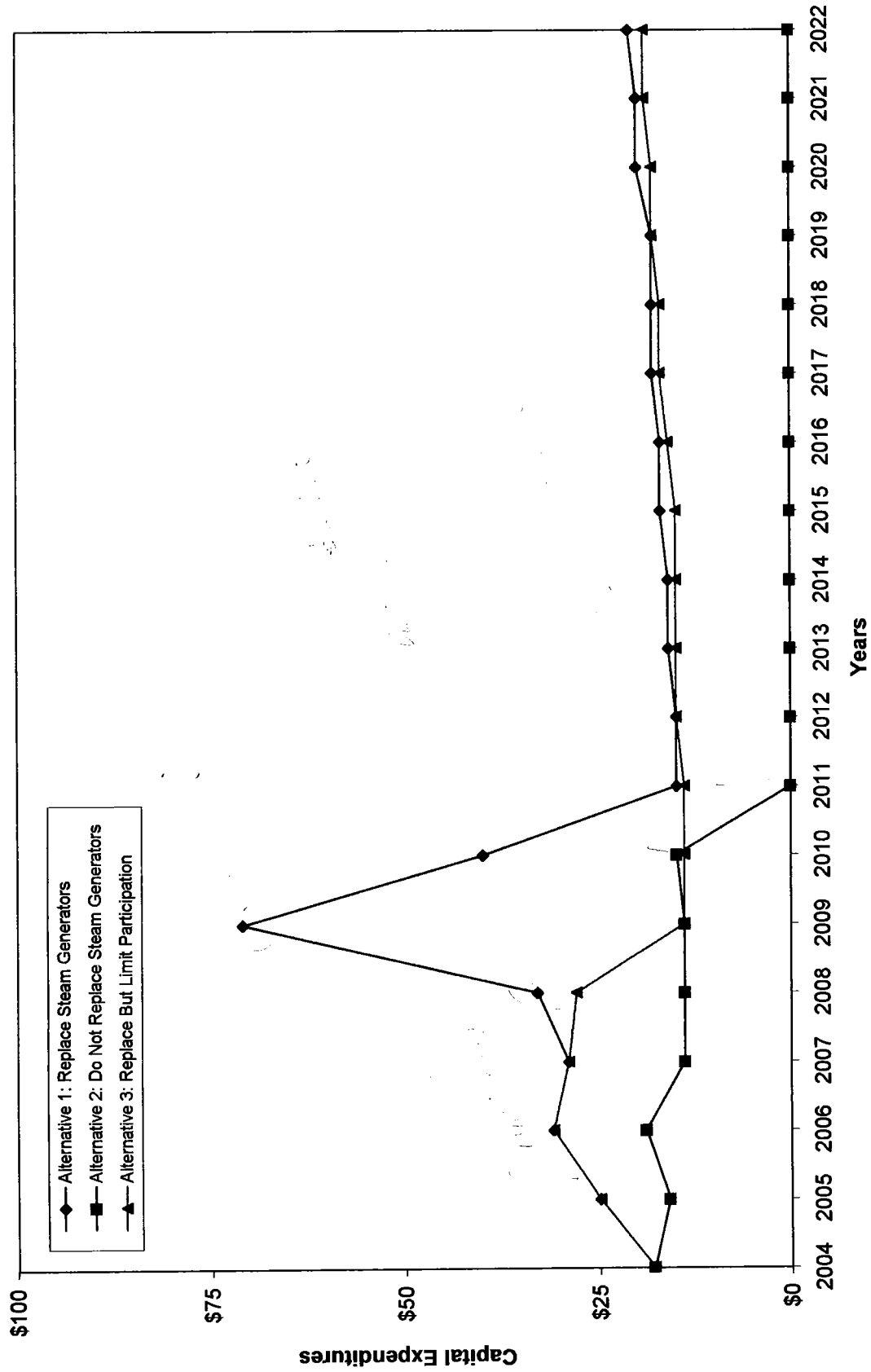
\$ in Millions



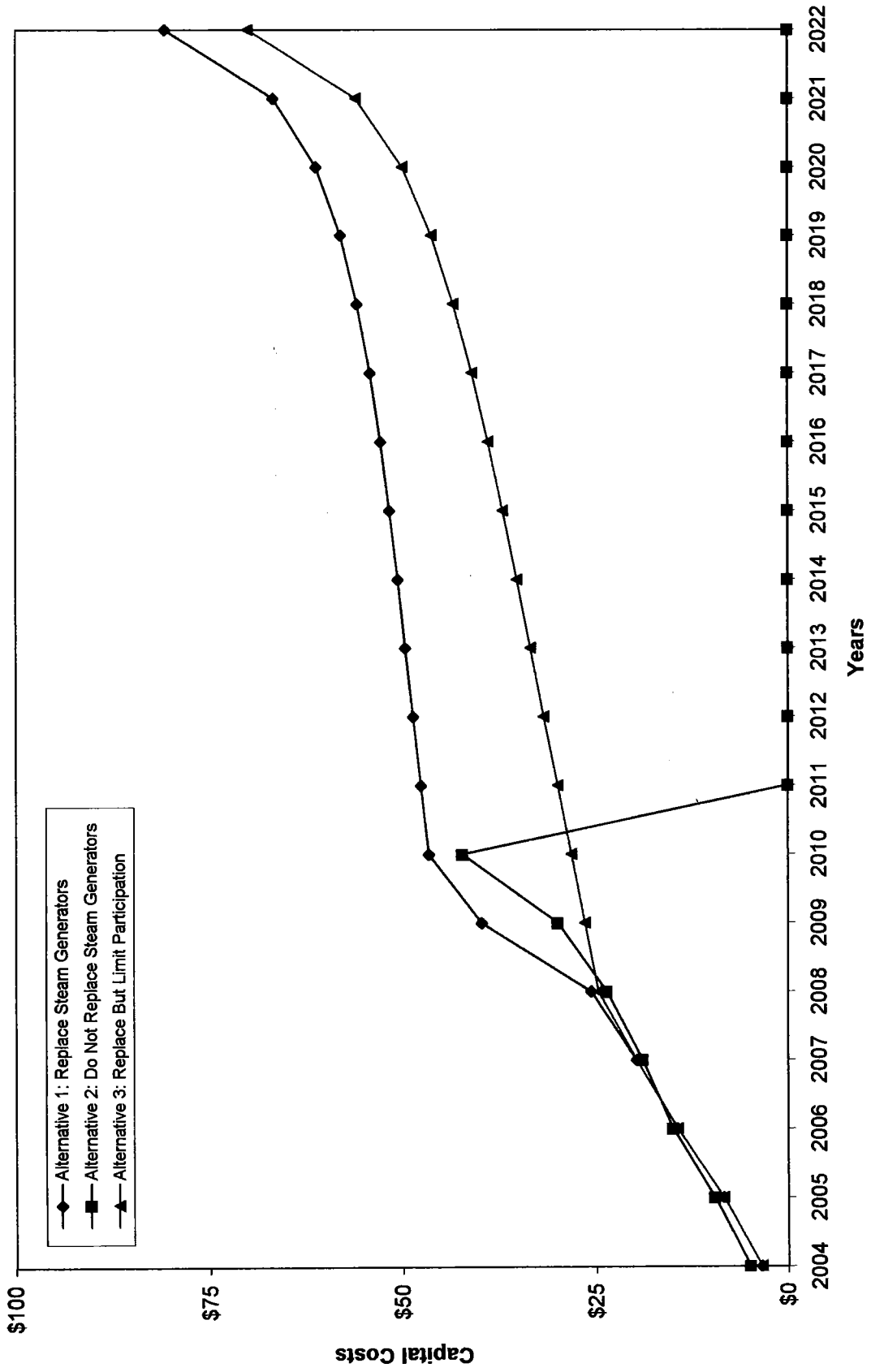
ALTERNATIVE #3: REPLACE BUT LIMIT PARTICIPATION \$ in Millions



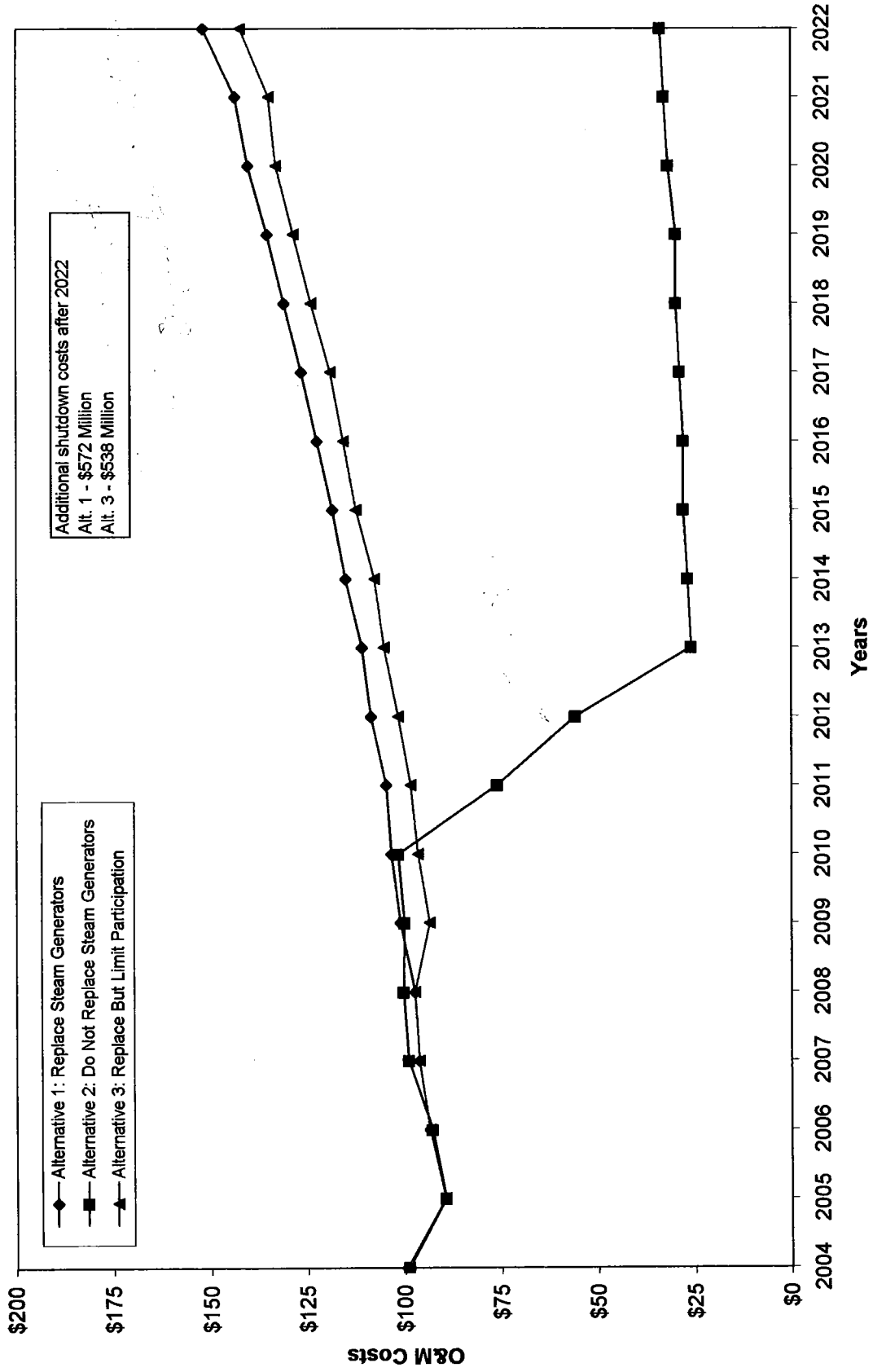
SONGS Capital Expenditures \$ in Millions



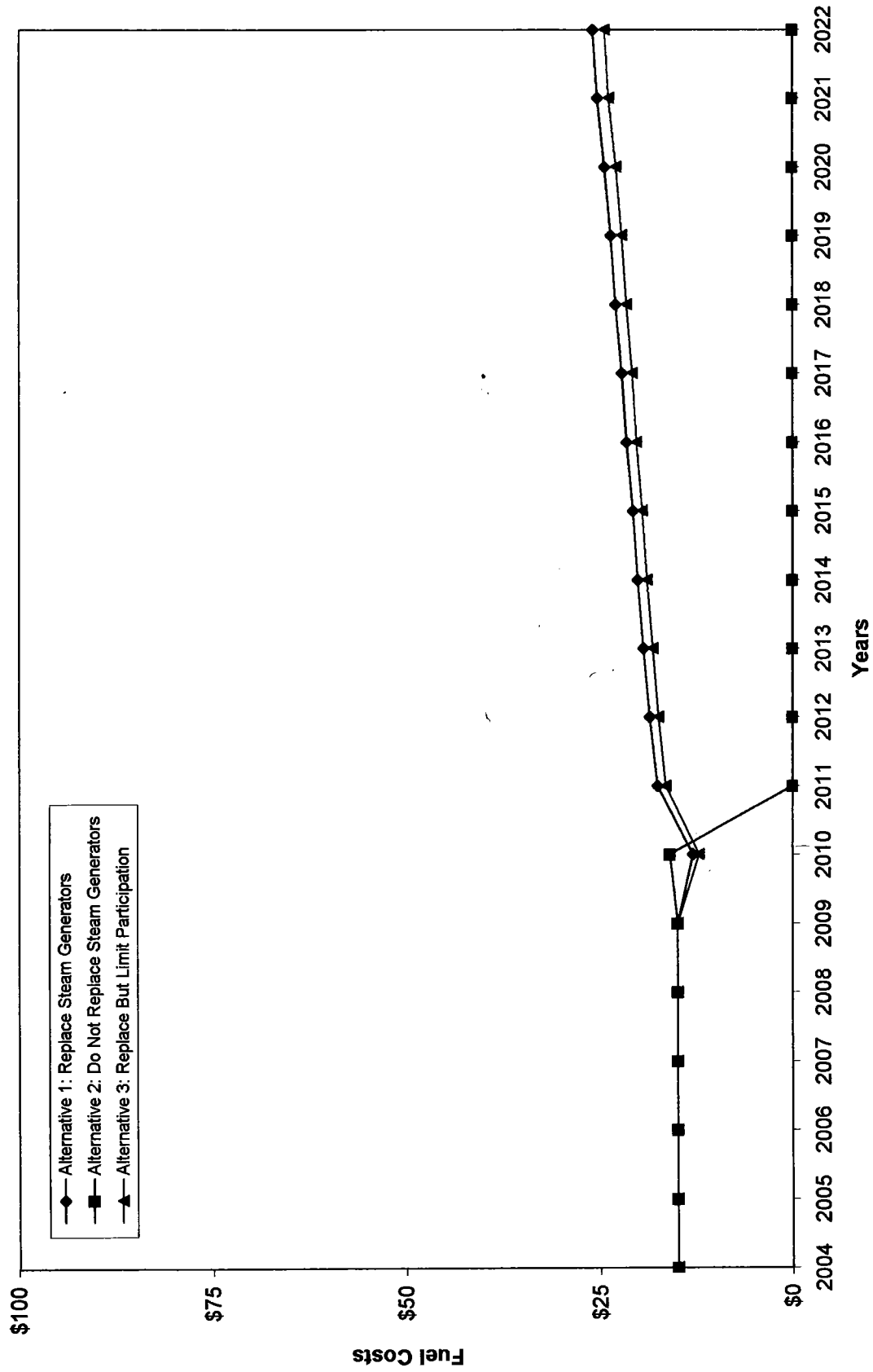
SONGS Capital Costs \$ in Millions



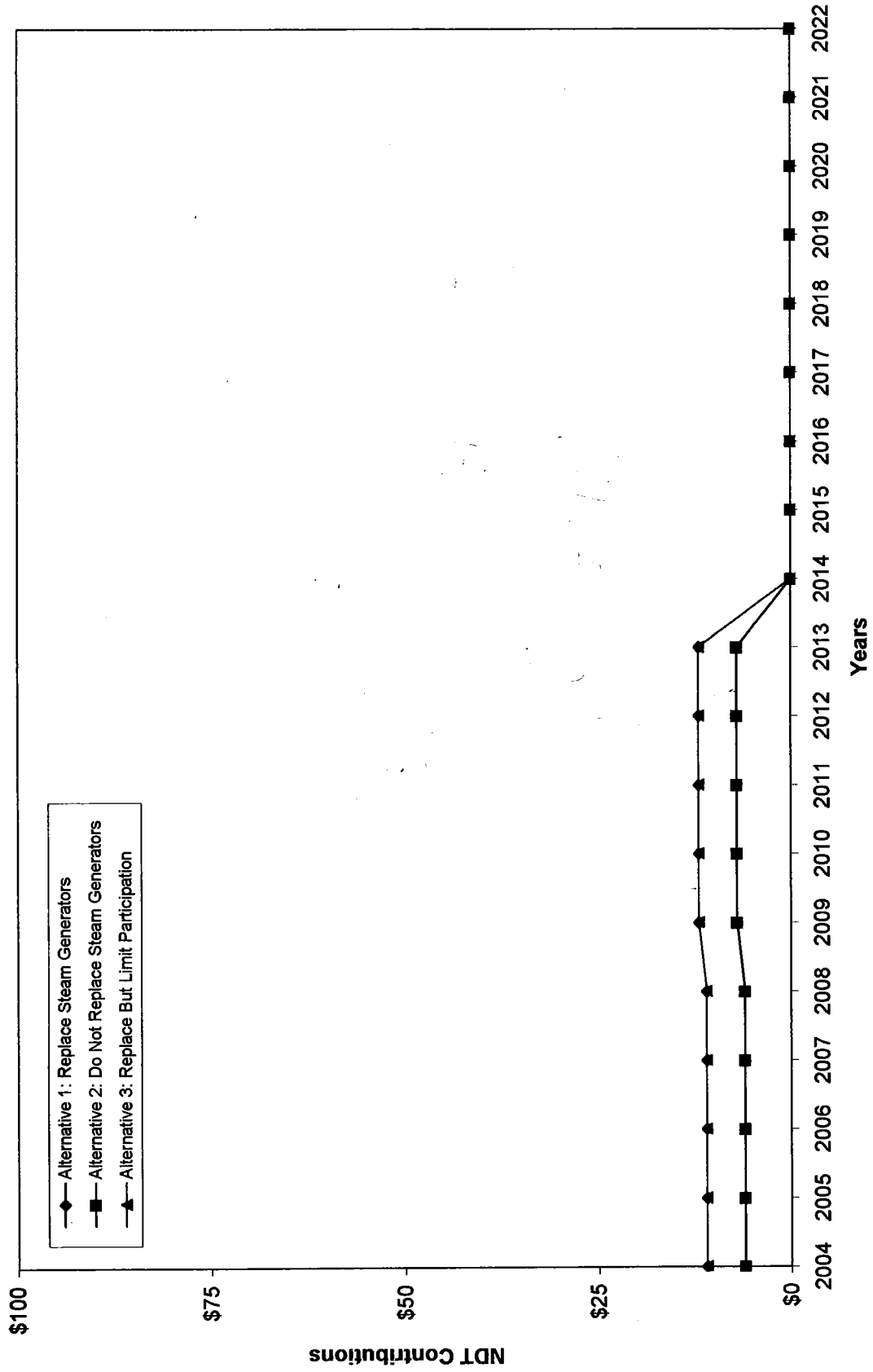
SONGS O&M Costs \$ in Millions



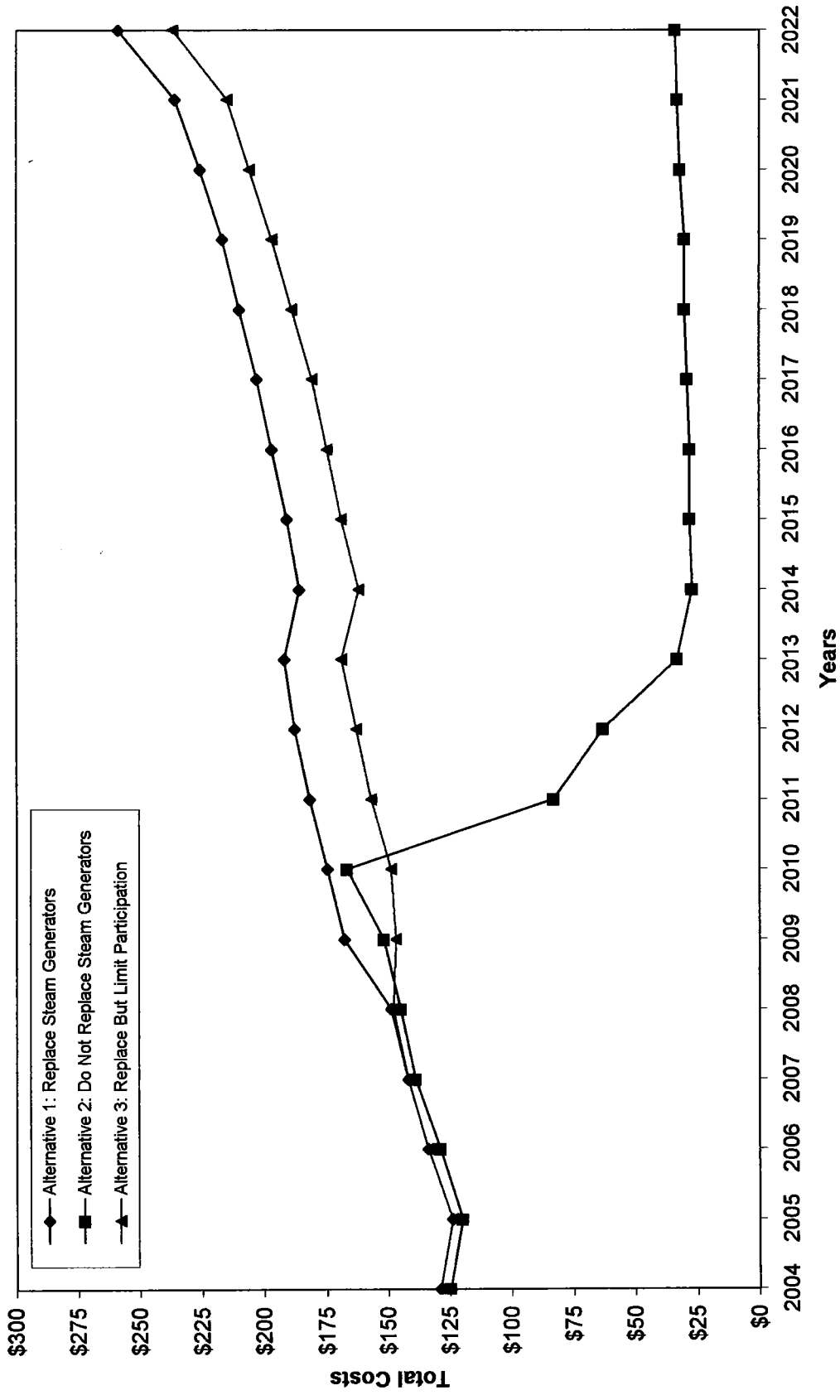
SONGS Fuel Costs \$ in Millions



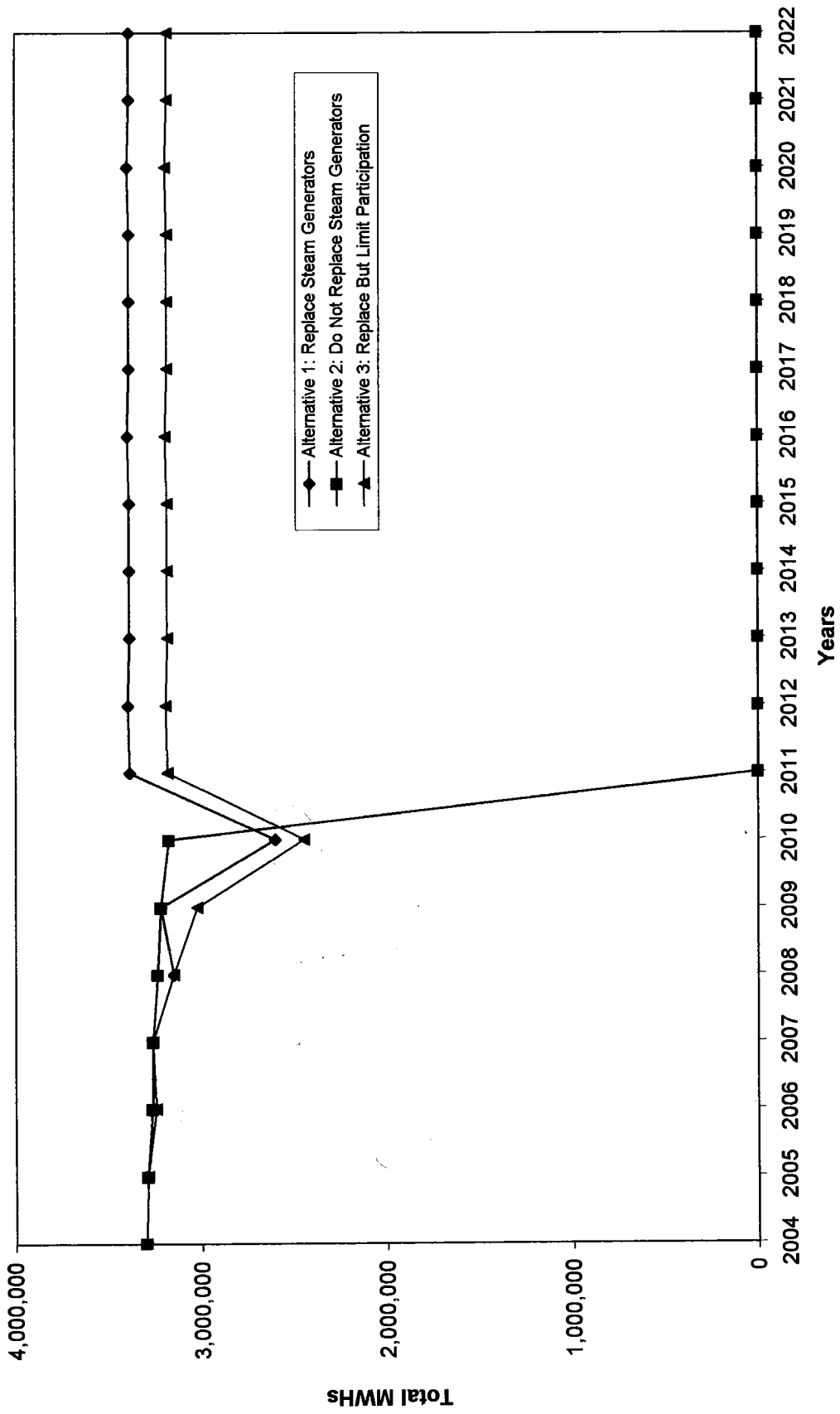
SONGS Nuclear Decommissioning Trust Contributions \$ in Millions



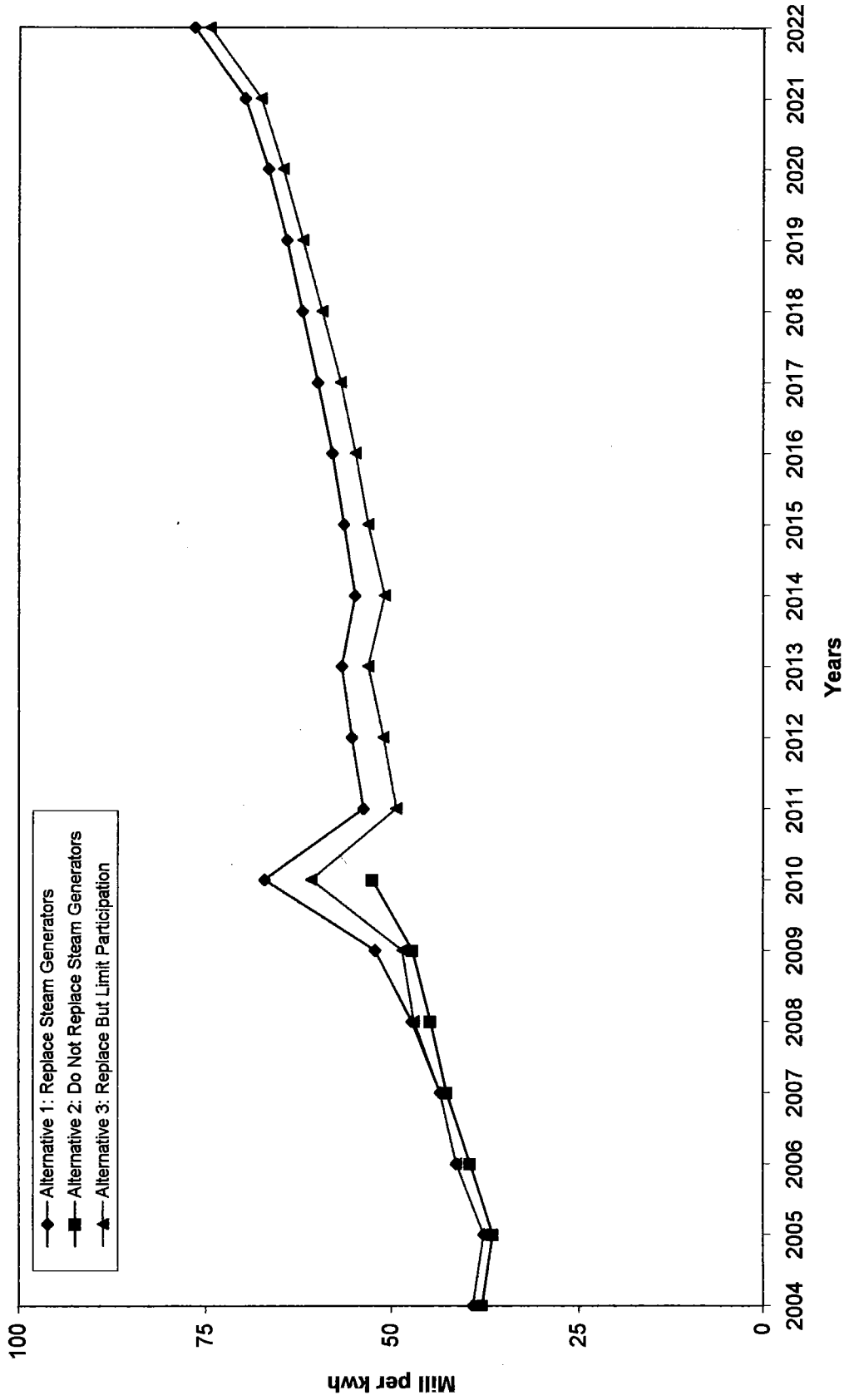
SONGS Total Costs \$ in Millions



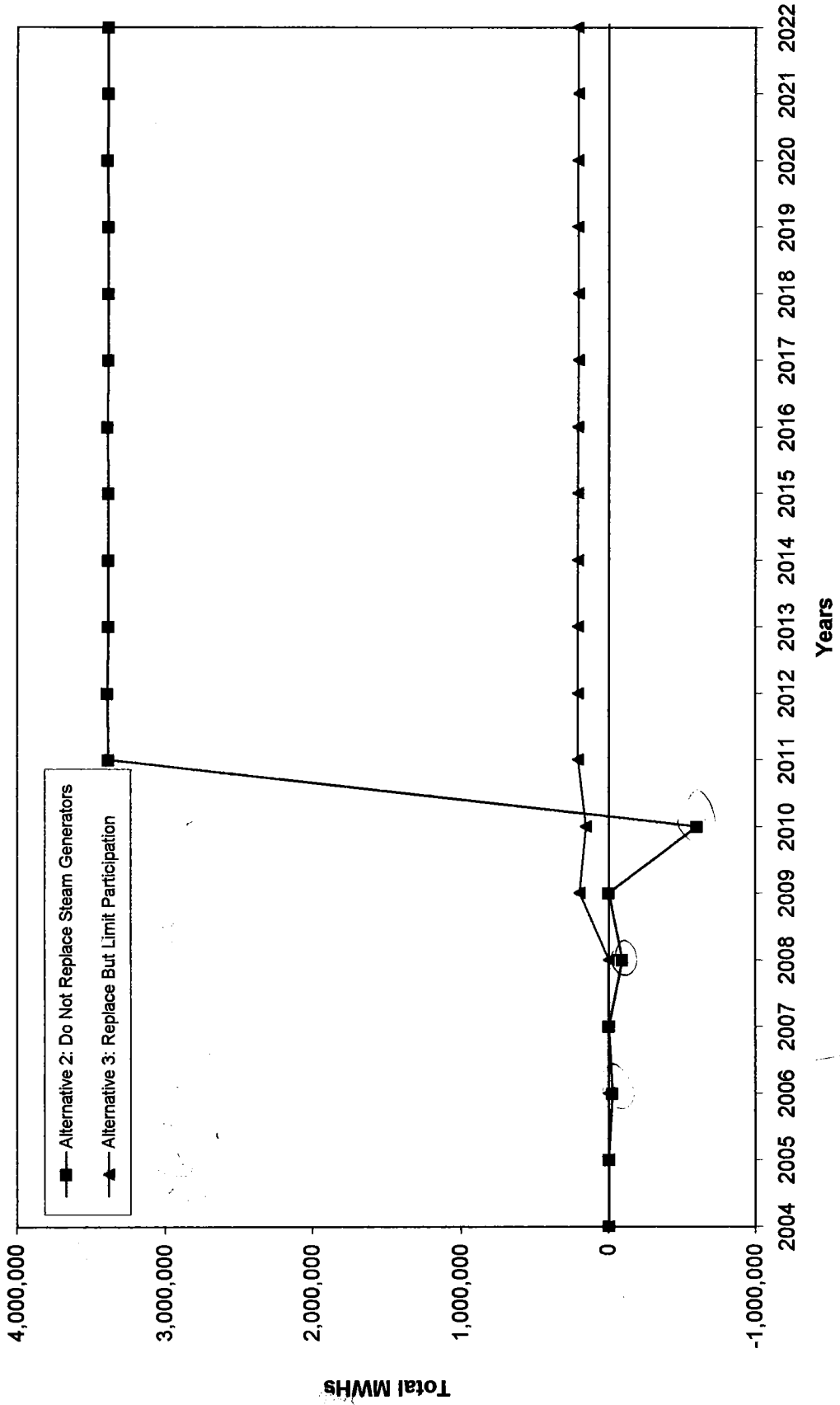
SONGS Generation MWHs



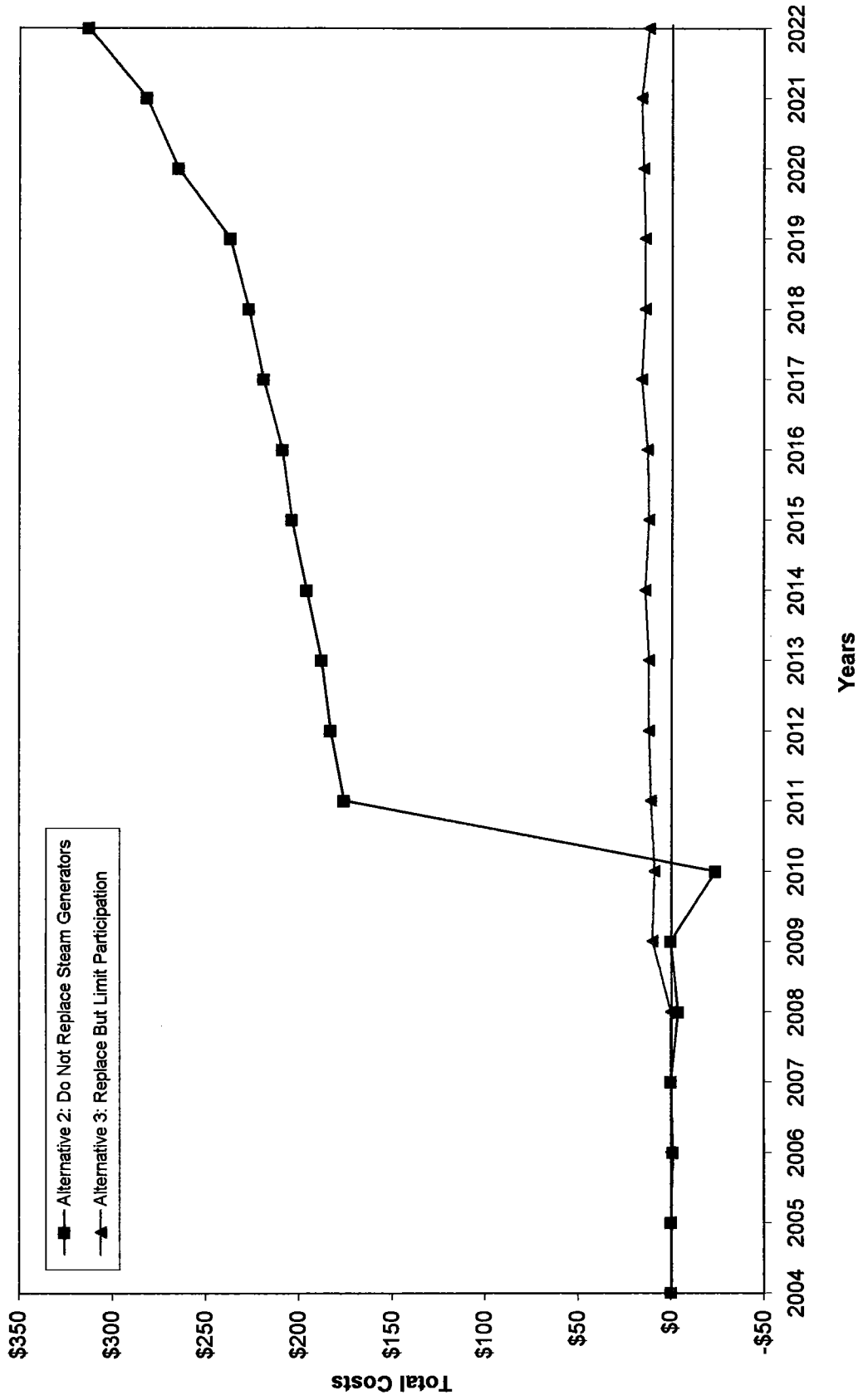
SONGS Energy Costs Mill per kwh



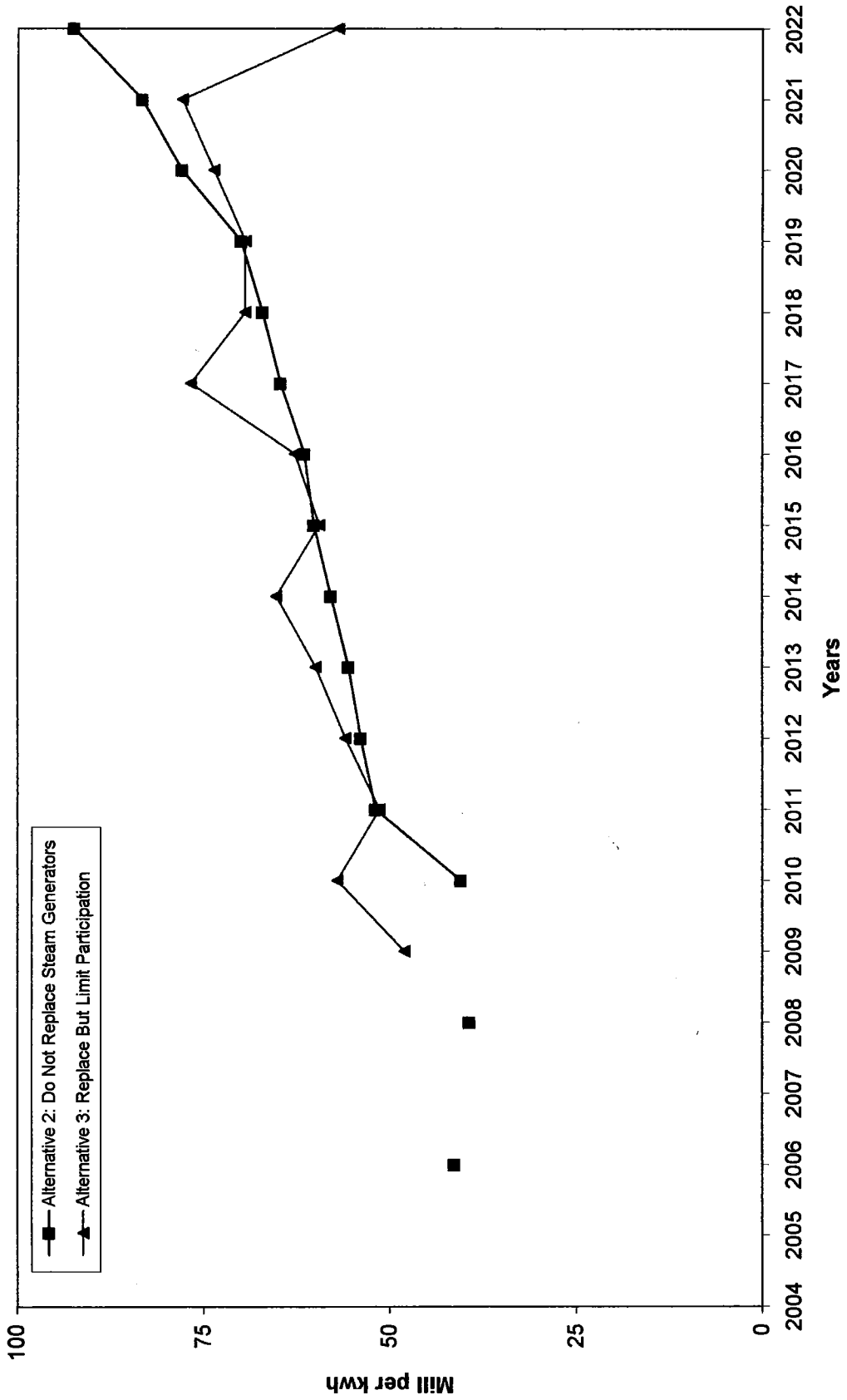
Replacement Generation MWHs



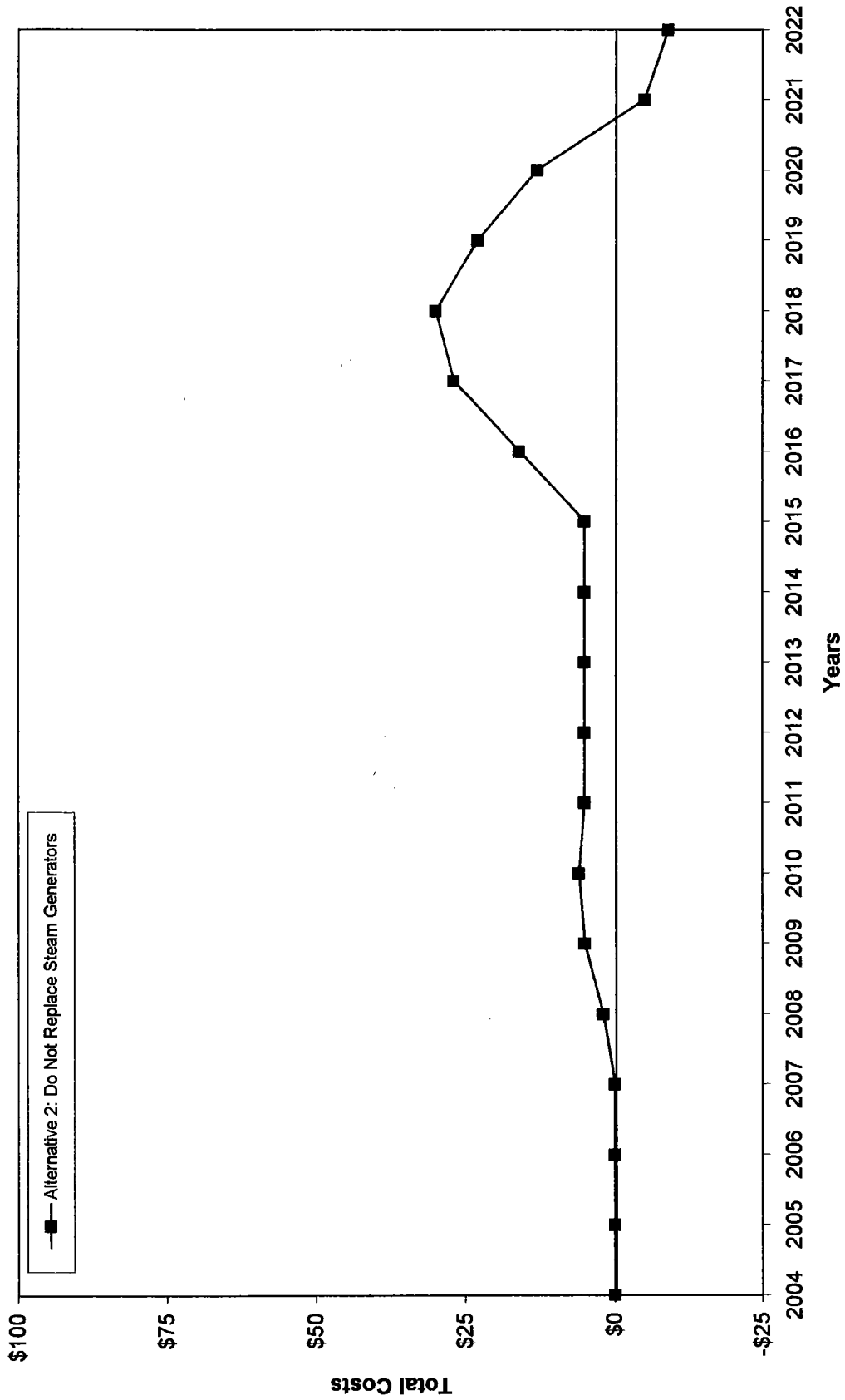
Replacement Generation Costs \$ in Millions



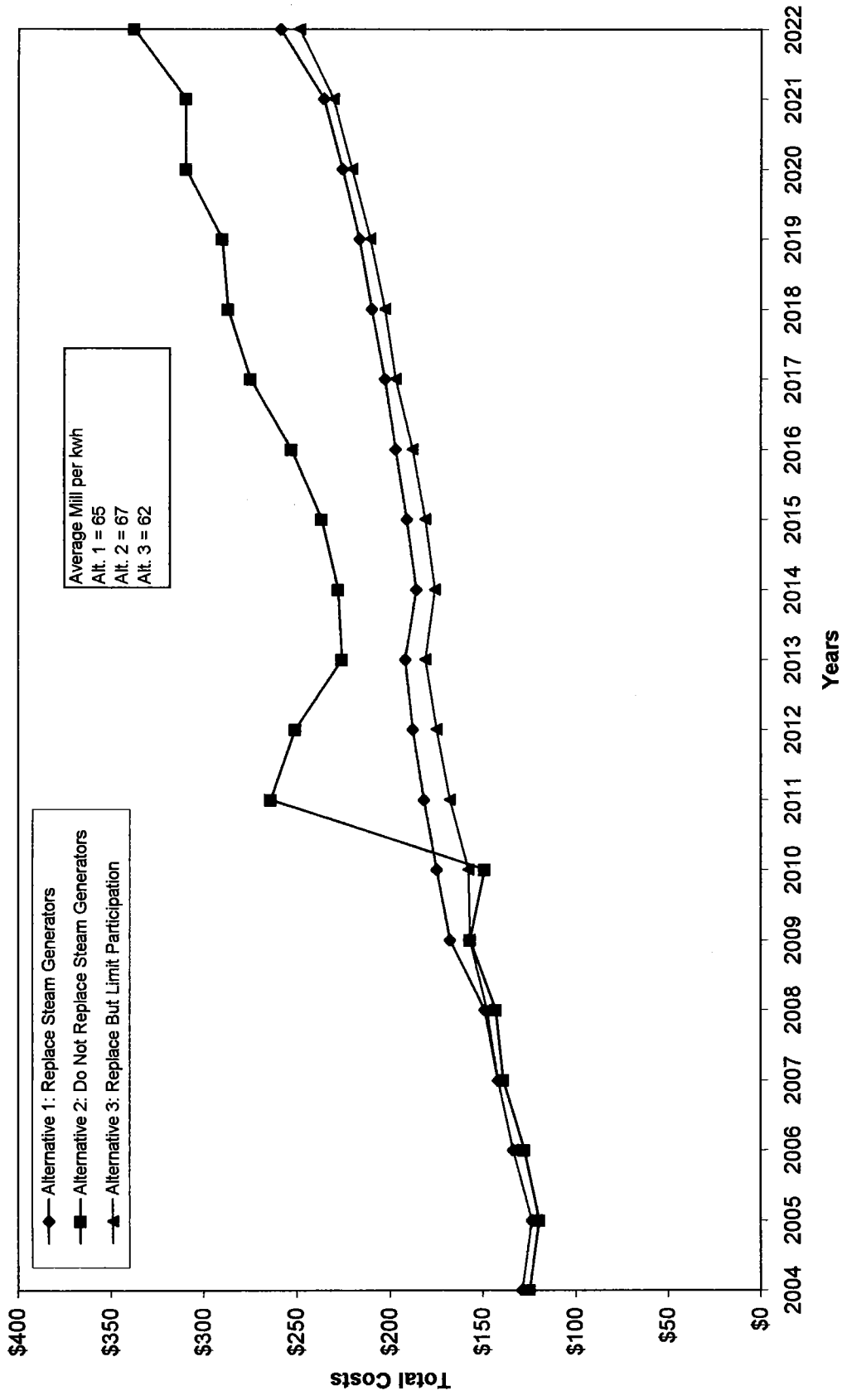
Replacement Energy Costs Mill per kwh



Advancement of Transmission Costs \$ in Millions



Total Energy Costs \$ in Millions




INDEPENDENT ASSESSMENT UPDATE

SCOPE

- Assess basis for SCE's decision to replace in 2009-10 including:
 - Quantitative SG degradation forecasts.
 - Qualitative issues affecting SG replacement date.
 - Non-feasibility of extending SG life through additional temperature reduction (Alternative 4).
 - Non-feasibility of single-unit operation.
- Assess SCE's SONGS economic model and all input assumptions:
 - Generation forecast
 - O&M cost forecast
 - Capital cost forecast
 - Fuel cost forecast
- Assess SCE's SGR implementation plans:
 - Project Schedule
 - Project Cost Estimate
 - Replacement SG Specifications
 - Replacement SG Transportation Plan
 - Replacement SG Installation Plan
 - Original SG disposal plan

STATUS

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- We have transferred documents already in our possession and requested additional documents from SCE.
- SCE's release of documents delayed due to confidentiality agreements between SCE and vendors.
- Partial document release today.

UPDATED SCHEDULE INFORMATION

SDG&E DECISION-MAKING SCHEDULE

- ✓ Sargent & Lundy Begins work 5/12/03
- ✓ SONGS BOR meeting (SGR Information) 5/16/03
- ✓ Review economic analysis with JPA 6/03/03

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- SCE/SDG&E Trans Study prelim results 6/30/03 +/-
- SONGS Legal Committee meeting 7/09/03 (if needed)
- Present final recommendation to JPA 7/11/03 +/-
- Sempra reviews 7/12/03 to 7/21/03
- SONGS BOR meeting to vote on SGR 7/21/03 *

* Note: SCE corporate approval of SGR is on a parallel path, and will probably occur after 7/21/03.

SCE'S STEAM GENERATOR REPLACEMENT SCHEDULE

- CPCN preparation 2/03-9/03
- CPCN approval process 9/03-1/05
- Award fabrication contract 1/05
- Award installation contract 7/05
- Award transportation contract 6/06
- Unit 2 SG Replacement 4/09-8/09 (113-day outage)
- Unit 3 SG Replacement 11/09-3/10 (113-day outage)

POTENTIAL NEXT STEPS

- Additional "No Replace" run(s) with longer assumed remaining life.
- Adjust economics to incorporate results of update transmission study.
- Adjust economics to incorporate results of Sargent & Lundy report.
- Additional consulting assistance re. SG replacement date (NRC regulatory risk of operating SGs past 2010).

SDG&E DECISION ANALYSIS TEAM

- Business Planning & Budget Jack Lewis
- Electric & Gas Procurement Vince Bartolomucci
Sue Garcia
Mike Olson
Rich Sheaffer
- Resource Planning Rob Anderson
Jeff Huang
- Transmission Planning Dave Korinek
David Wang
- Legal Jim Walsh
- Management Sponsor Lad Lorenz