# Supercritical Solar Thermal Generator System (Revised Economic Model)

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## Overview

This document provides an updated and conservative economic model for the previously outlined supercritical solar thermal generator system. While the original model assumed ideal conditions and high efficiency, this revision incorporates more realistic expectations for performance, cost, and longevity.

## Updated Assumptions

- System efficiency reduced from 25% to 18%  
- Unit construction cost increased from ~$29,500 to ~$65,000  
- Annual maintenance set at 2% of capital cost  
- Total system lifespan: 20 years  
- Daily solar irradiance: 90% of Death Valley levels  
- Lens system still assumed to deliver 12x solar concentration

## Performance and Economics

- Daily usable energy output per unit: ~74.09 kWh  
- Total energy output over 20 years: ~540,840.0 kWh  
- Total lifecycle cost (unit + 20 years maintenance): $91,000 USD  
- Effective cost per kWh: ~$0.168 USD

## Conclusion

While the cost per kWh is higher under conservative assumptions (~$0.168), the system remains economically viable, especially in remote or desert-edge regions where grid electricity is expensive or unavailable. It remains competitive with diesel-based systems and offers long-term operational stability and energy independence.

## Document Attribution

This revised analysis was generated based on the original design session and authored by the system originator. This document provides an adjusted projection for more realistic deployment scenarios.