

TAX INCENTIVES FOR OCEAN WAVE ENERGY

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OCEAN WAVE ENERGY

“Wave energy is where wind energy was 20 years ago, and it is predicted to be just as big an industry.”

Jonathan Norling

NWCCurrent.com

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**“70 PERCENT OF THE WORLD IS
FILLED WITH OPPORTUNITIES”**

OCEAN WAVE ENERGY PRESENTATION

- Part I – How ocean wave energy fits into the renewable energy mix.
- Part II – What is ocean wave energy?
- Part III – Proposed tax incentives for ocean wave energy.

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PART I HOW OCEAN WAVE ENERGY FITS INTO THE RENEWABLE ENERGY MIX

Sources of Renewable Energy

- Hydropower – large-scale and small-scale
- Biomass – organic plant matter
- Geothermal – steam from earth
- Wind – wind currents-turbines-electricity
- Solar – capture Sun's energy in batteries
- Fuel Cell – hydrogen stored in cells
- Wave Energy – waves-turbines-electricity

Estimated Cost of Production (per kilowatt-hour)

- FOSSIL FUEL

- Coal 2 – 6 cents
- Gas 3 - 4 cents
- Nuclear 2 –14 cents

- RENEWABLE ENERGY

- Large-Scale Hydro 1.5-2.5 cents
- Small-Scale Hydro 5 -12 cents

Estimated Cost of Production (per kilowatt-hour)

- RENEWABLE ENERGY

- Biomass 3 – 9 cents
- Geothermal 4 – 6 cents
- Wind 3 – 9 cents
- Solar 12 -40 cents
- Fuel Cell 8 -15 cents
- Wave Energy 4 – 9 cents

Reasons to Encourage Renewable Energy

- Environment
- National Energy Self-Sufficiency
- Improving Corporate Image
- Providing Consumer Choice

Tax Incentives to Promote Development of Renewable Energy

- Developmental Tax Incentives
- Production Tax Incentives
- Non-Tax Policies

Objective of Environmental Tax Incentives to Promote Development of Renewable Energy

- Tax incentives in place to promote continuous technological improvements
- With the result that renewable energy becomes cost-competitive with other power sources in the future
- At this point, phase out tax incentives

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PART II

WHAT IS OCEAN WAVE ENERGY?

Source of Ocean Wave Energy

- Sun transfers its energy to the surface of the earth
- Surface of the earth transfers energy to air by heating it thereby causing winds
- Winds transfer energy to oceans by creating waves

Source of Ocean Wave Energy

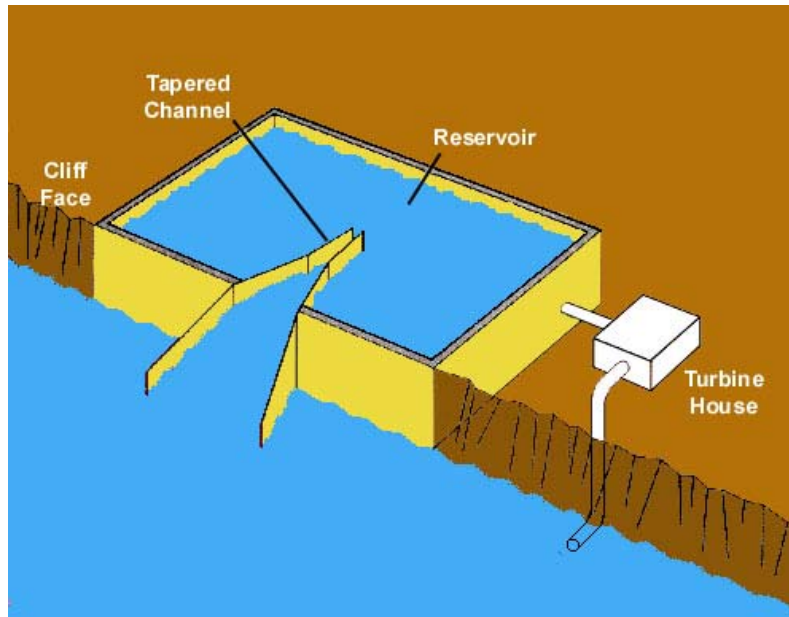
- An ocean wave represents a flow of motion or energy rather than a movement of water
- Analogy – snapping a rope
- 0.1% of ocean energy, if harnessed, could more than satisfy world energy demand

Methods Available to Harness Ocean Wave Energy

- Tapered channel system – similar to conventional hydroelectric system
- Float system – buoys sitting on ocean surface
- Oscillating water column system – air forced up and down column past turbine

Tapered Channel System

- Source: Australian CRC for RE Ltd.



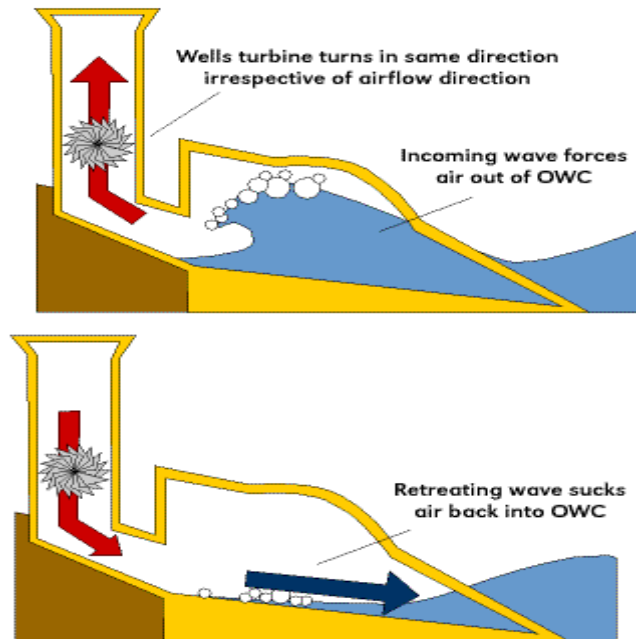
Floating System Wave Farm

Source: U. S. Department of the Interior



Oscillating Water Column System

Source: Australian CRC for RE Ltd.



Obstacles to Harnessing Ocean Wave Energy and Environmental Impact

- Visual appearance and noise
- Coastal deposition and erosion
- Ecosystems
- Endangered species
- Fishing
- Impact on shipping
- Marine pollution

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PART III PROPOSED TAX INCENTIVES FOR OCEAN WAVE ENERGY

Tax Incentives to Promote Ocean Wave Energy

- Developmental Tax Incentives (Tax Credits, Accelerated Depreciation, Shorter Tax Lives, Property Tax Relief, Government Subsidized Loans, Etc.)
- Production Tax Incentives (Tax Credit for each Kilowatt Hour of Production)
- Also, Non-Tax Policies

Example of Developmental Tax Incentives

(Assumptions: \$1,000,000 investment,
20 year economic life, 35 percent tax rate,
8 percent discount rate)

Investment Minus Tax Benefit = Net Investment

1. No tax incentives 20yr life/SL	\$814,448
2. Immediate Expensing	\$650,000
3. 30% Investment Credit/5yr life	\$476,859

Example of Production Tax Credit (1.9 Cents per Kilowatt-Hour Credit)

- FOSSIL FUELS

- Coal 2 – 6 cents

- Gas 3 – 4 cents

- Nuclear 2 -14 cents

- OCEAN WAVE ENERGY

4 – 9c less 1.9c credit = 2.1 – 7.1 cents

Non-Tax Policies to Promote Investment in Ocean Wave Energy

- Direct investment incentives (grants)
- Research and development programs
- Renewable portfolio standard (RPS) for electricity companies
- Renewable set asides
- Green marketing/pricing

Summary and Conclusions

- Expand production tax credit to include ocean wave energy
- Production tax credit and non-tax incentives in place to promote continuous technological improvements in ocean wave energy technology