SUMMARY OF ENERGY TRANSMISSION SYNERGY

BETWEEN ELECTRICITY AND HYDROGEN

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1. They are both environmentally compatible.

2. They are based on simple elements: electricity on electrons, hydrogen on the smallest atom/molecule.

3. They can be converted to each other with relatively high efficiencies: electricity to hydrogen in electrolysers, and hydrogen to electricity in fuel cells.

4. We need both electricity and hydrogen: for example, electricity for lighting, motors, electronics, and hydrogen for transportation, inexpensive heat generation.

5. Electricity is transportable, but not storable by itself; hydrogen is both transportable and storable.

6. On a per unit energy transmitted basis, long distance energy transmission by hydrogen is cheaper than that by electricity.

7. Because of Paragraphs 3, 4, 5, 6 and 7, electricity and hydrogen compliment each other as the synergistic energy carriers to meet the needs of humankind for a sustainable future.

8. Electricity's shortcomings, mentioned in Paragraphs 5 and 6 above, may be overcome by the development of practical high temperature superconductors.

9. Development of practical high temperature superconductors may result in long distance transmission of electricity through superconductor cables surrounded by liquid hydrogen carrying insulated pipelines, causing inexpensive transmission of both electricity and fuel (hydrogen).