

RENEWABLE ENERGY & ENERGY EFFICIENCY FY'14 BUDGET

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President, The Stella Group, Ltd.

on

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Washington, DC



The Stella Group, Ltd.

The Stella Group, Ltd.. is a strategic technology optimization and policy firm for clean distributed energy users and companies which include advanced batteries and controls, energy efficiency, fuel cells, geoexchange, heat engines, microhydropower (including tidal and wave), modular biomass, photovoltaics, small wind, and solar thermal (including CSP, daylighting, water heating, industrial preheat, building air-conditioning, and electric power generation). The Stella Group, Ltd. blends distributed energy technologies, aggregates financing with a focus on system standardization. Scott Sklar serves as Steering Committee Chair of the Sustainable Energy Coalition, composed of the renewable and energy efficiency associations and analytical groups, and sits on the national Boards of Directors of the non-profit Business Council for Sustainable Energy and The Solar Foundation, teaches two unique interdisciplinary sustainable energy courses at The George Washington University and appointed onto the US Department of Commerce (DOC) RE/EE Advisory Committee.

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Former Bush Council Boyden Gray and Former CIA Director James Woolsey 8\9\10

Source: <http://www.washingtontimes.com/news/2010/aug/9/gray-woolsey-putting-an-end-to-oil-dependency/>

“About a quarter of what is in your car’s gas tank is highly toxic. Thus, your exhaust, and that of others, contributes substantially every day both to unacceptable cancer risks for those people who breathe it and to tens of thousands of premature deaths from cardiopulmonary complications.”

Former CIA Director James Woolsey has tried to call attention to the link between America's addiction to foreign oil and terrorism. He has repeatedly said U.S. taxpayers were paying for "both sides" in the war on terror, American soldiers on one end and the terrorists who receive support from oil-rich nations on the other.

WATER and ENERGY

http://www.nationalatlas.gov/articles/water/a_wateruse.html

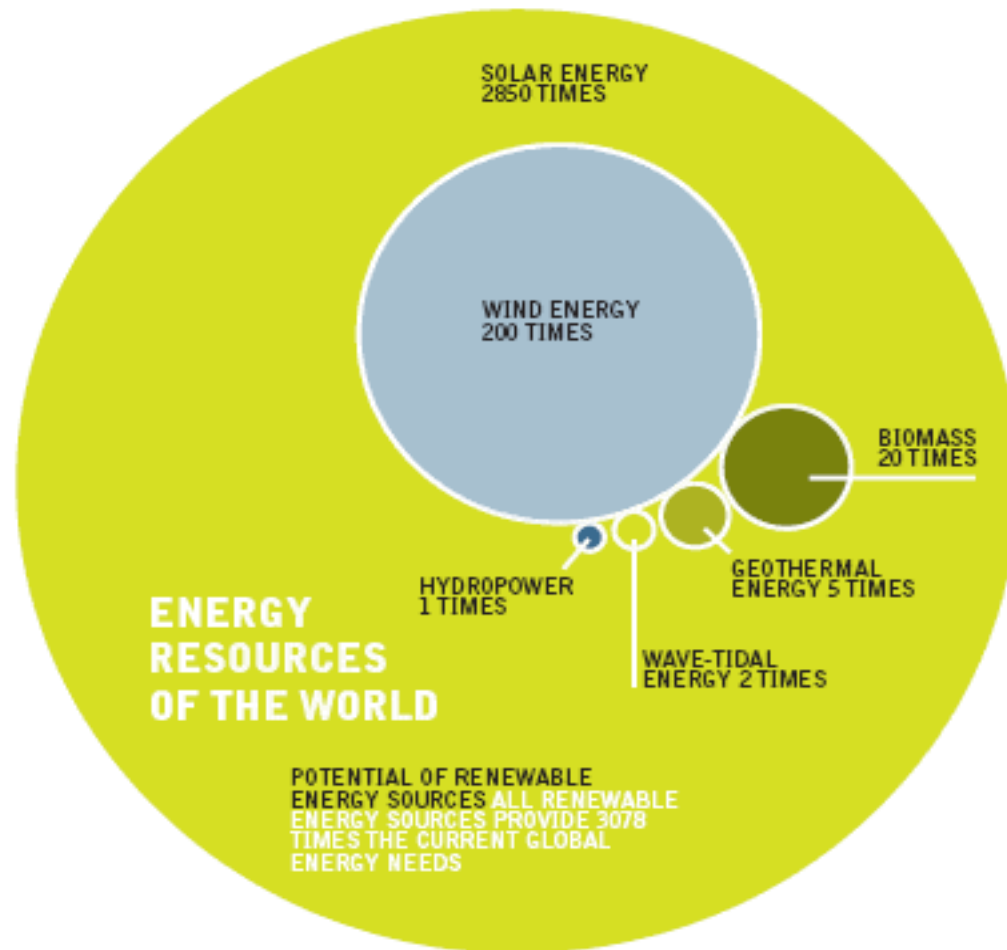
Thermoelectric power accounts for about half of total water withdrawals. About 52 percent of fresh surface-water withdrawals and about 96 percent of saline-water withdrawals are for thermoelectric-power use.

Irrigation accounts for about a third of water use and is currently the 2nd largest use of fresh water in the United States.

In 2011, global atmospheric levels of CO₂ reached a high of 391.3 parts per million (ppm), up from 388.6 ppm in 2010 and 280 ppm in pre-industrial times. According to new research conducted by the Worldwatch Institute.

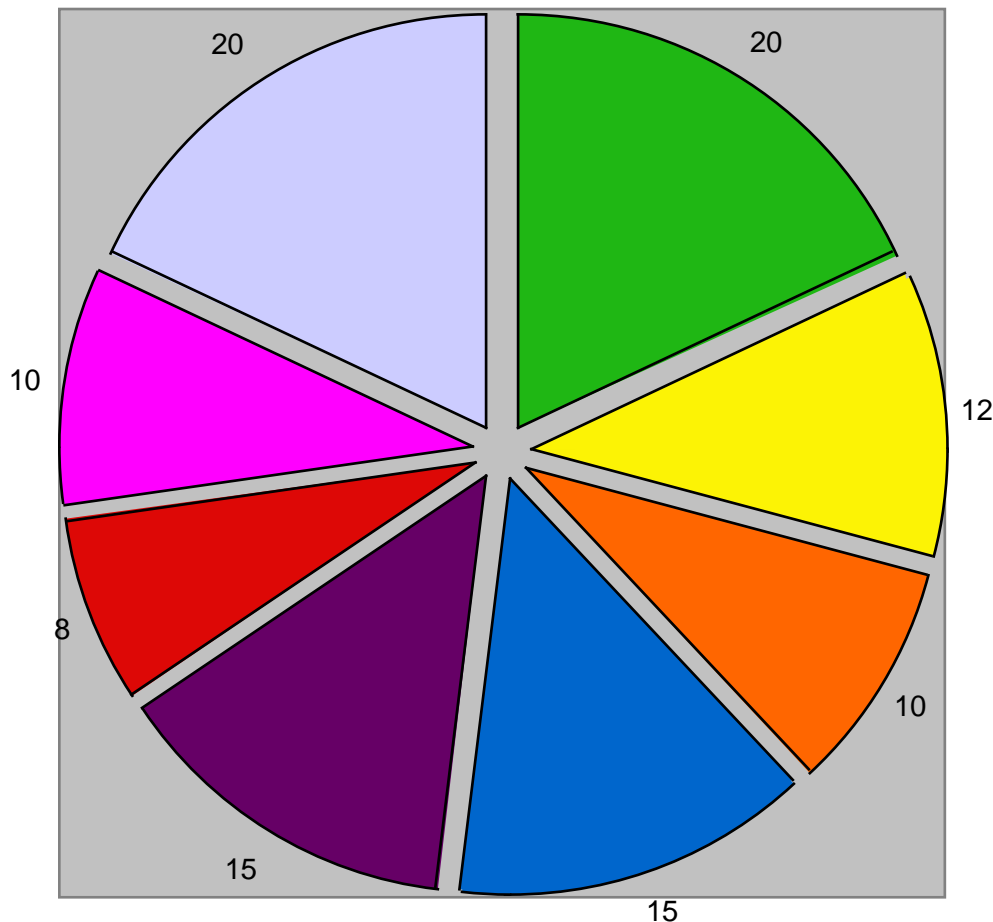
More than 70 percent of CO₂ emissions result from the burning of fossil fuels for energy use, such as electricity generation, transportation, manufacturing, and construction. In 2009, electricity generation and heating alone accounted for 41 percent of all energy related CO₂ emissions.

figure 30: energy resources of the world



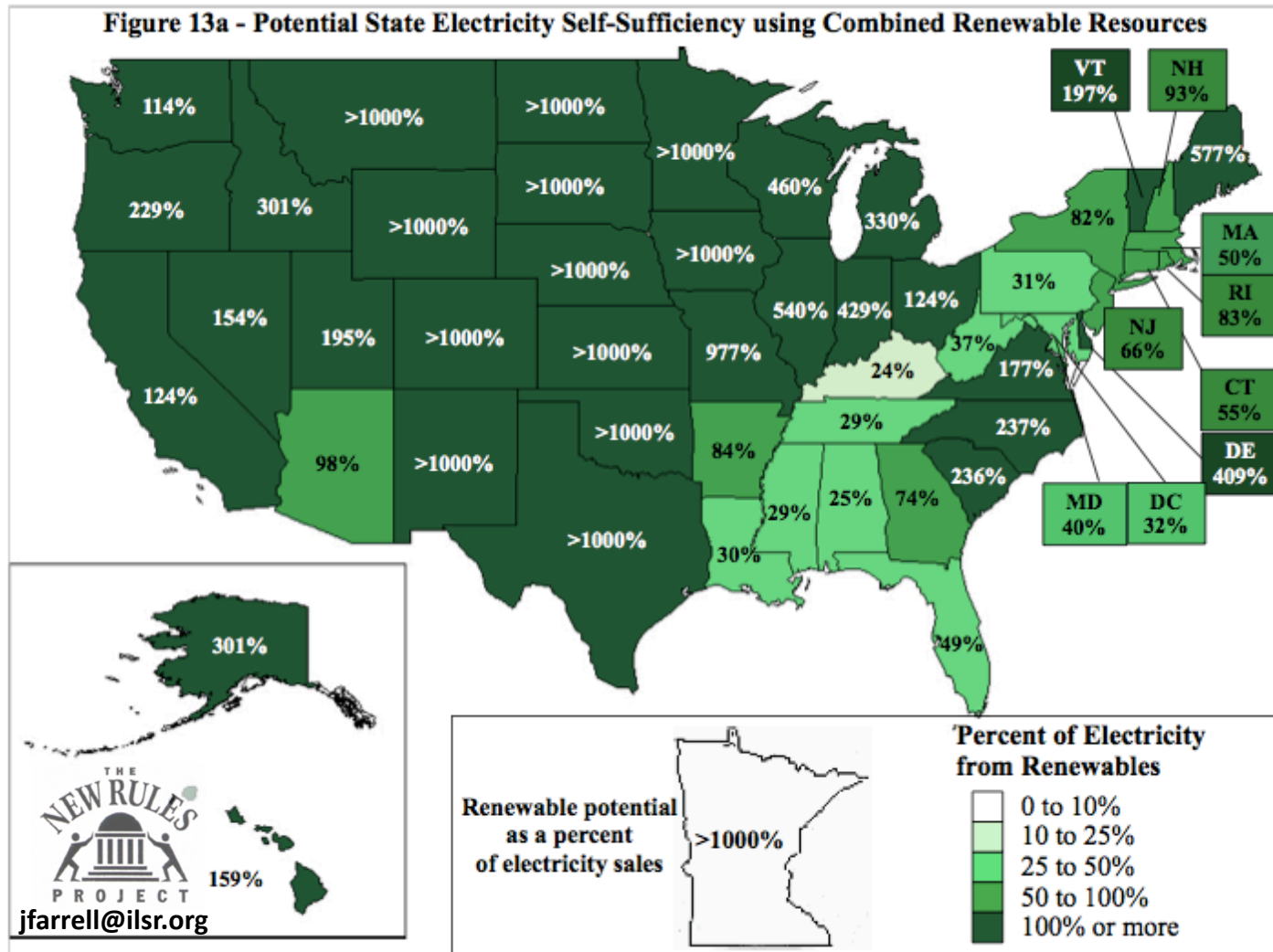
source WBGU

Percentage of Clean Energy in 21st Century



- 20% Biomass Power
- 12% Building RE: GCHP/SD
- 10% Geothermal
- 15% Solar-Concentrated Solar
- 15% Solar-Distributed PV/ST
- 8% Waste Heat
- 10% Water Energy
- 20% Wind Energy

32 States can be Self-Sufficient



International Energy Agency Warns Of Ballooning

World Fossil Fuel Subsidies:

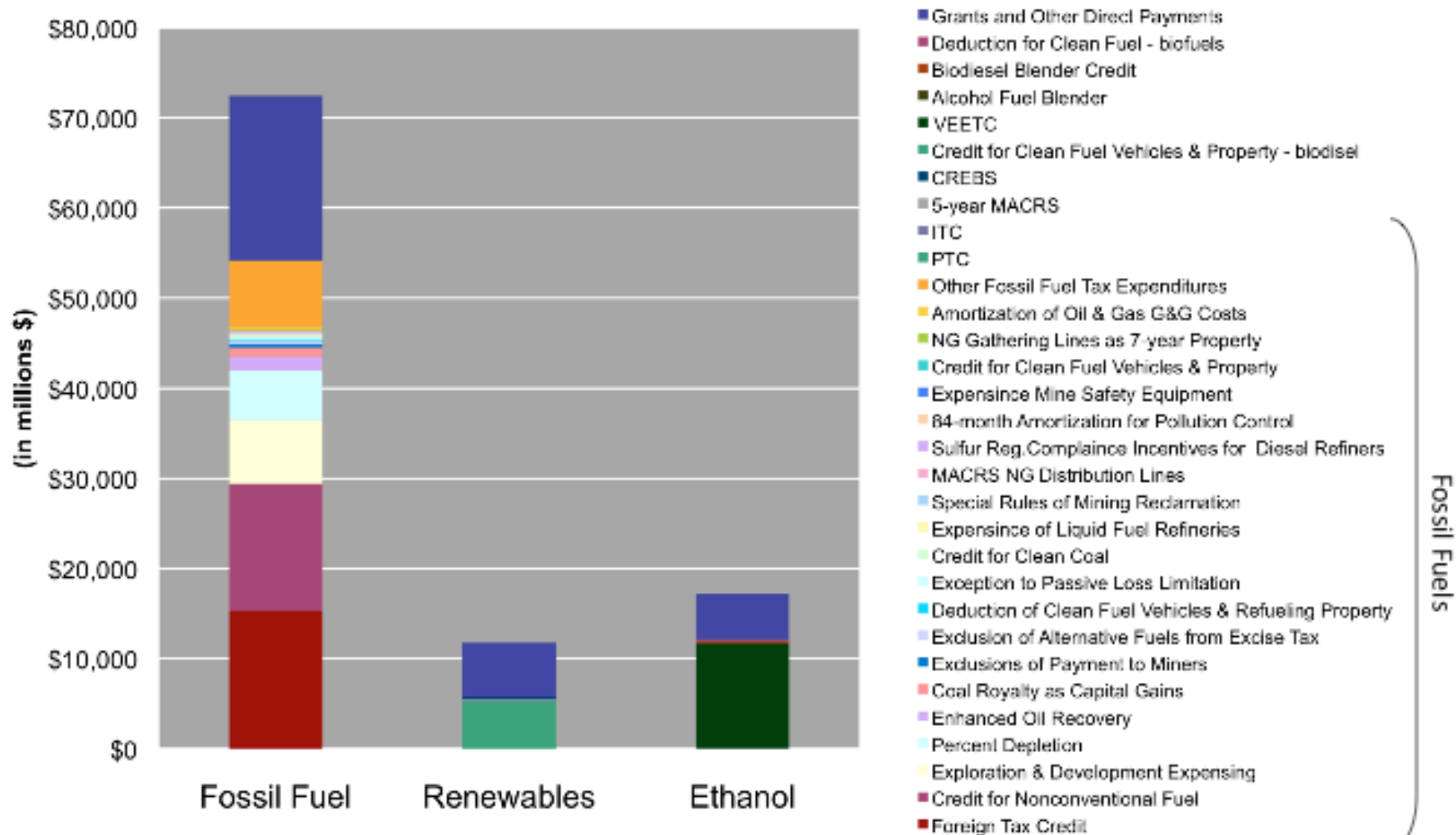
Reuters, by Muriel Boselli, October 5, 2011

<http://planetark.org/wen/63469>

Global subsidies for fossil fuel consumption are set to reach \$660 billion in 2020, or 0.7 percent of global gross domestic product, unless reforms are passed to effectively eliminate this form of state aid, according to the International Energy Agency. The IEA estimated such subsidies at \$409 billion in 2010, compared to \$312 billion in 2009. Oil products had the largest subsidies at \$193 billion in 2010 while \$91 billion went to natural gas. Iran and Saudi Arabia had the biggest subsidies. Leaders of the Group of 20 major economies committed in Pittsburgh in 2009 to phase out, over the medium-term, inefficient fossil fuel subsidies that encourage wasteful consumption. Eliminating fossil fuel consumption subsidies by 2020 would cut global energy demand by 4 percent and considerably reduce carbon emissions growth, the IEA said.

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Level the Playing Field: Fossil Fuels Enjoy Permanent Incentives 5x Those of Renewables



Nuclear: Not Possible Without Subsidies

- The Union of Concerned Scientists released a February 2011 report about the subsidies for nuclear power. The report, “Nuclear Power: Still Not Viable Without Subsidies,” found that more than 30 subsidies have supported every stage of the nuclear fuel cycle, from uranium mining to long-term waste storage. Added together, these subsidies often have exceeded the average market price of the power produced. The report also examines the subsidies for new reactors.
- Executive Summary:
http://www.ucsusa.org/assets/documents/nuclear_power/nuclear_subsidies_summary.pdf
- Full Report:
http://www.ucsusa.org/assets/documents/nuclear_power/nuclear_subsidies_report.pdf

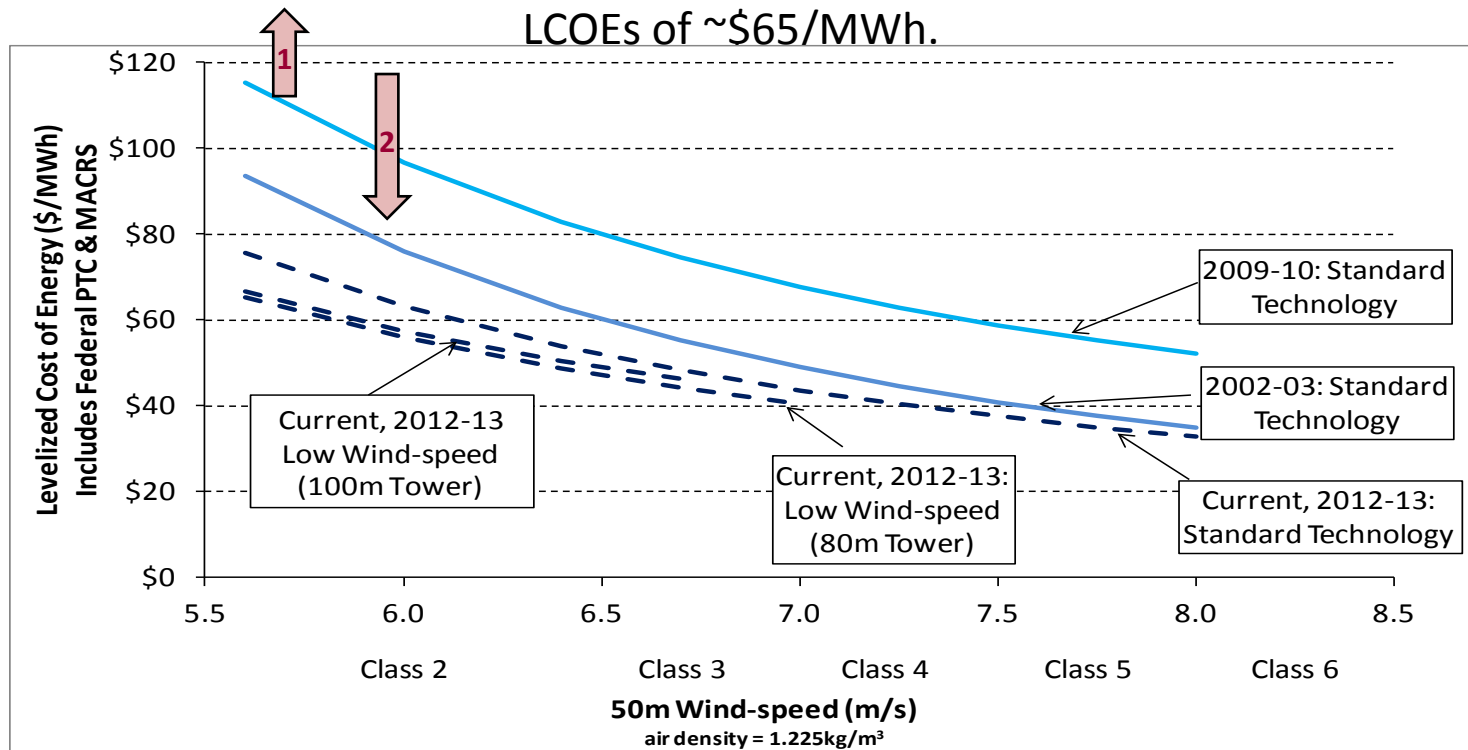
US DOE FY'14 EE/RE REQUEST

EERE Budget Summary

	FY 2012 Current	FY 2013 Request	FY 2013 Annualized CR	FY 2014 Request
Sustainable Transportation	617,287	770,000	635,573	957,000
Vehicle Technologies	320,966	420,000	330,819	575,000
Bioenergy Technologies	194,995	270,000	200,496	282,000
Hydrogen and Fuel Cell Technologies	101,326	80,000	104,258	100,000
Energy Efficiency	485,289	872,000	495,690	949,000
Advanced Manufacturing	112,692	290,000	116,287	365,000
Building Technologies	214,706	310,000	220,546	300,000
Federal Energy Management Program	29,891	32,000	30,074	36,000
Weatherization and Intergovernmental Activities	128,000	195,000	128,783	248,000
Renewable Electricity	471,570	490,000	481,785	615,500
Solar Energy	284,702	310,000	290,719	356,500
Wind Energy	91,813	95,000	93,825	144,000
Geothermal Technologies	36,979	65,000	38,094	60,000
Water Power	58,076	20,000	59,147	55,000
Corporate	216,311	250,000	217,635	267,000
Facilities and Infrastructure	26,311	26,400	26,472	46,000
Program Direction	165,000	164,700	166,010	185,000
Strategic Programs	25,000	58,900	25,153	36,000
Subtotal Energy Efficiency and Renewable Energy	1,790,457	2,337,000	1,830,683	2,788,500
Use of Prior Year Balances	-9,909	-69,667	-9,970	-12,800
Total Energy Efficiency and Renewable Energy	1,780,548	2,267,333	1,820,713	2,775,700

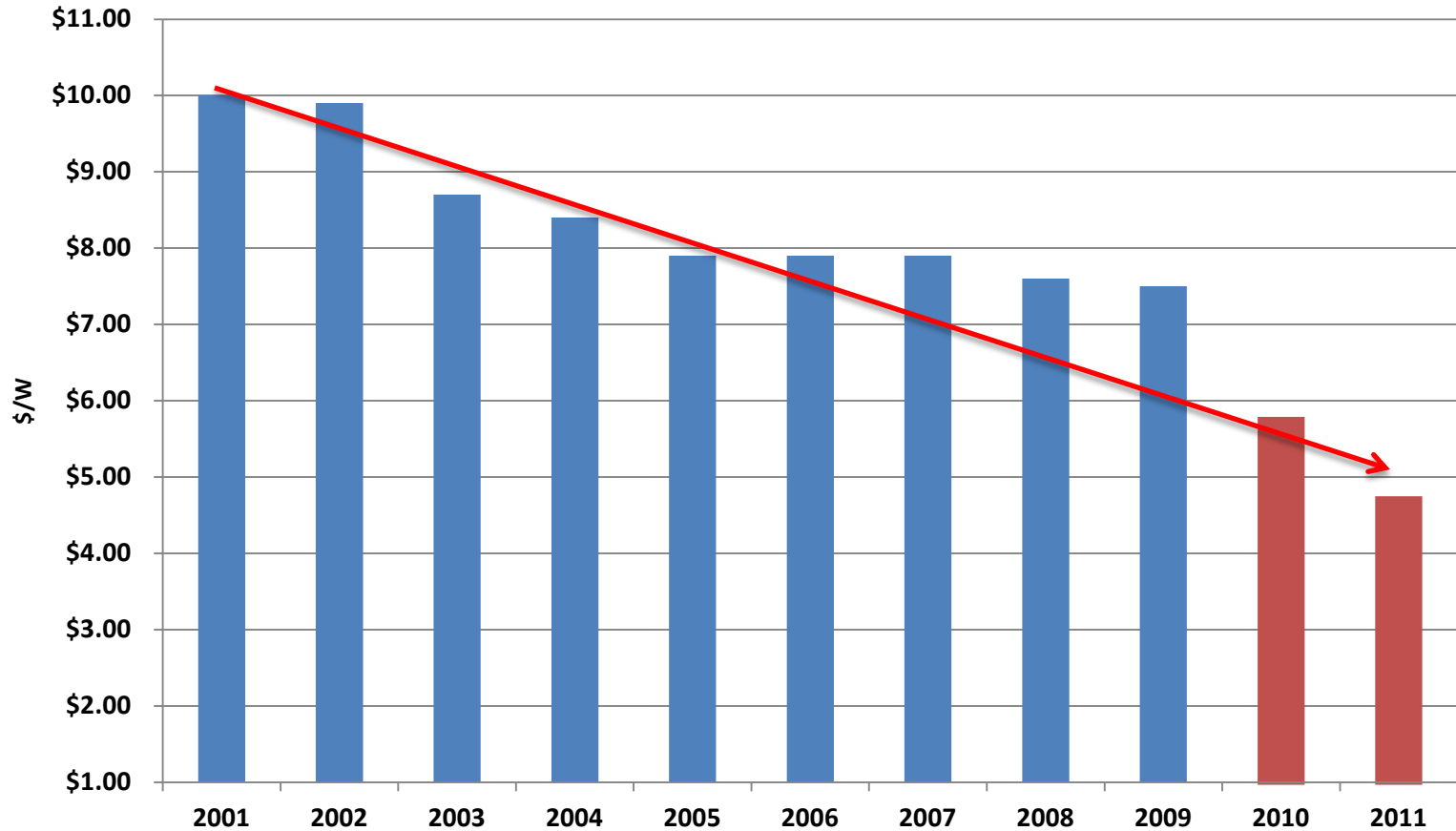
Low Wind Speed Designs Found To Be Very Attractive, Where They Can Be Deployed

Based on current pricing and assumptions: 100m rotor diameter is found to be economically attractive in comparison to 2012-2013 'Standard Technology' where it can be deployed; a wind sheer higher than 1/7th is found to be needed for the 100m tower to be least cost in comparison to the 80m option (with the 100m rotor). The highest wind speed sites evaluated below can support LCOEs as low as ~\$33/MWh (real\$), while the lower wind speed sites have LCOEs of ~\$65/MWh.



PV System Prices Are Falling Dramatically

Average Installed Price of PV



Source: SEIA/GTM Research Solar Market
Insight, "2011 Year In Review"

■ LBNL "Tracking the Sun IV"

■ SEIA/GTM Research



U.S. Tidal Energy Project (New York, NY)

Company Seeks Matching Funds

Introduction

Verdant Power is interested in providing select potential investors the opportunity to invest in a U.S.-based producer and developer of marine renewable energy

- Verdant Power established in 2000, headquartered in New York, NY, with subsidiaries in Canada, UK, and Hong Kong
- Leading technology provider and project developer within the marine renewable energy space, utilizing proven proprietary system (Gen5) to generate commercially viable energy
- Expertise in marine energy systems, water resource assessment, site analysis and development, project design, and project operations and maintenance
- Commercial pilot project being developed in New York supported by funding from various public and private institutions

Highlights

Poised to receive first-ever commercial license for tidal power generation in U.S.

Proprietary Technology

- Generates clean energy from the currents of tides, rivers and large canals
- Energy resources are predictable and underwater placement eliminates view shed disruption
- Simple, scalable design maximizes siting potential (deep offshore, urban, village) and differentiates Company from competitors
- Gen4 turbine proven in an array (world first), supplying power to New York City customers
- Commercial class Gen5 system developed in partnership with U.S. Dept of Energy and U.S. and Canadian national labs

Public and Private Support

- Successful development and operational results have secured funding from governmental partners including U.S. Department of Energy, U.S. Navy, New York State, as well as Sustainable Development Technology Canada and Ontario Ministry of Research & Innovation
- MOUs in place, with eventual aim of developing commercial power farms with various leading public and private entities in North America, Europe, and Asia

Compelling Competitive Position

Significant development lead over competitors within the marine renewable energy space

Global tidal potential estimated at 60,000 MW (Red areas = prime tidal sites; Blue = good)



Turbines being assembled



Turbines being lowered to underwater position



Turbines submerged below the surface,
invisible from shore

DOE EE/RE MARINE ENERGY RD&D

- Request - DOE Waterpower RD&D Program -- \$55million.
- Last Year's Request - This compares to \$20 million requested last year.
- FY'13 current funding level is \$59million.

WHAT'S MISSING #1

- INTEGRATION WITHIN EE/RE –
 - Storage – advanced batteries, thermal salts, compressed a/w/o, hydrogen, pumped hydropower, etc
 - Buildings – advanced efficiency with renewables (LED, electrochromic glass, gchp, pv, small wind, fuel cells, etc.

Operational *PowerCube*™

New Castle, PA

Participating in the Regulation Market with PJM*

Grid Connected



Wind Capable



Solar Capable



EV Charging Powered by a 30kW Grid-Tied Solar Array

Operational *Power Cube*™ Commissioned at
Axion Power's Battery Manufacturing Plant



**PJM is the world's largest competitive wholesale electricity market*

WHAT'S MISSING #2

- Advanced communication protocols between technologies that meet new cyber-security requirements
- Blending above with smart grid, zero energy buildings, and continuity of operations within buildings, infrastructure, and our energy grids – both wires and pipelines

Lowest Watt Lights: Low Energy Out, Better Lumens Out



18 watts dimmable
cold cathode cfl 72 watt output



LED dimmable
flood 60 watt output

Camp Pendleton Marine Corp Base

Award: 2008 SDG@E Large Sustainable Communities Champion

Daylight Inside's Contribution: Designed, manufactured and installed passive daylighting Light Harvest Fixtures in 43 buildings

Results: Average 75 fc for 8 hours per day, reduction of kWh usage, safer working environment

Annual Savings: Estimated \$238,000

Referral: *"MCB Camp Pendleton is including daylighting installations in future modernization projects and would recommend the services of Daylight Inside."*

Jeff Allen, Energy Manager, Camp Pendleton, USMC



www.daylightinside.com



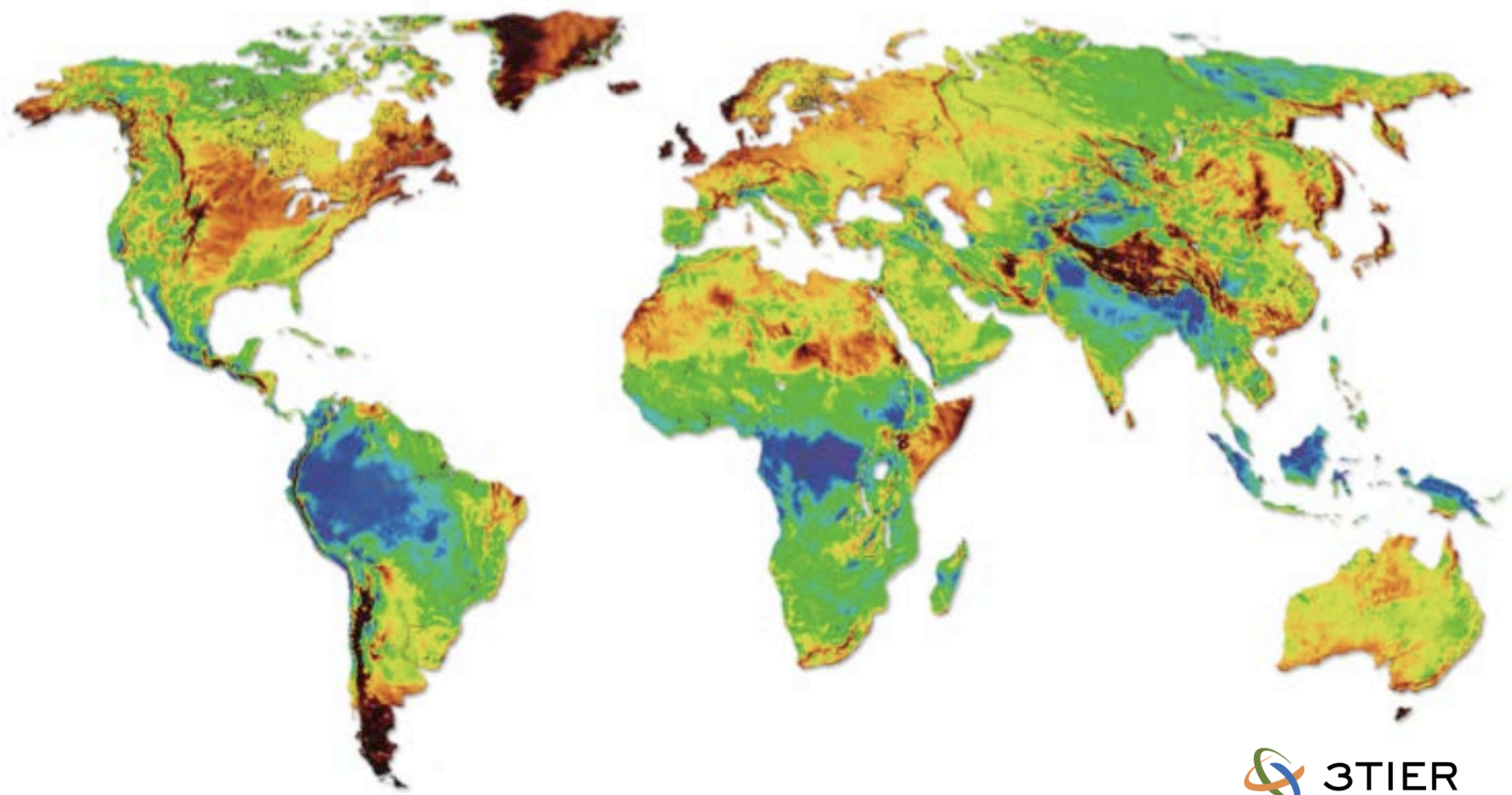
Century College

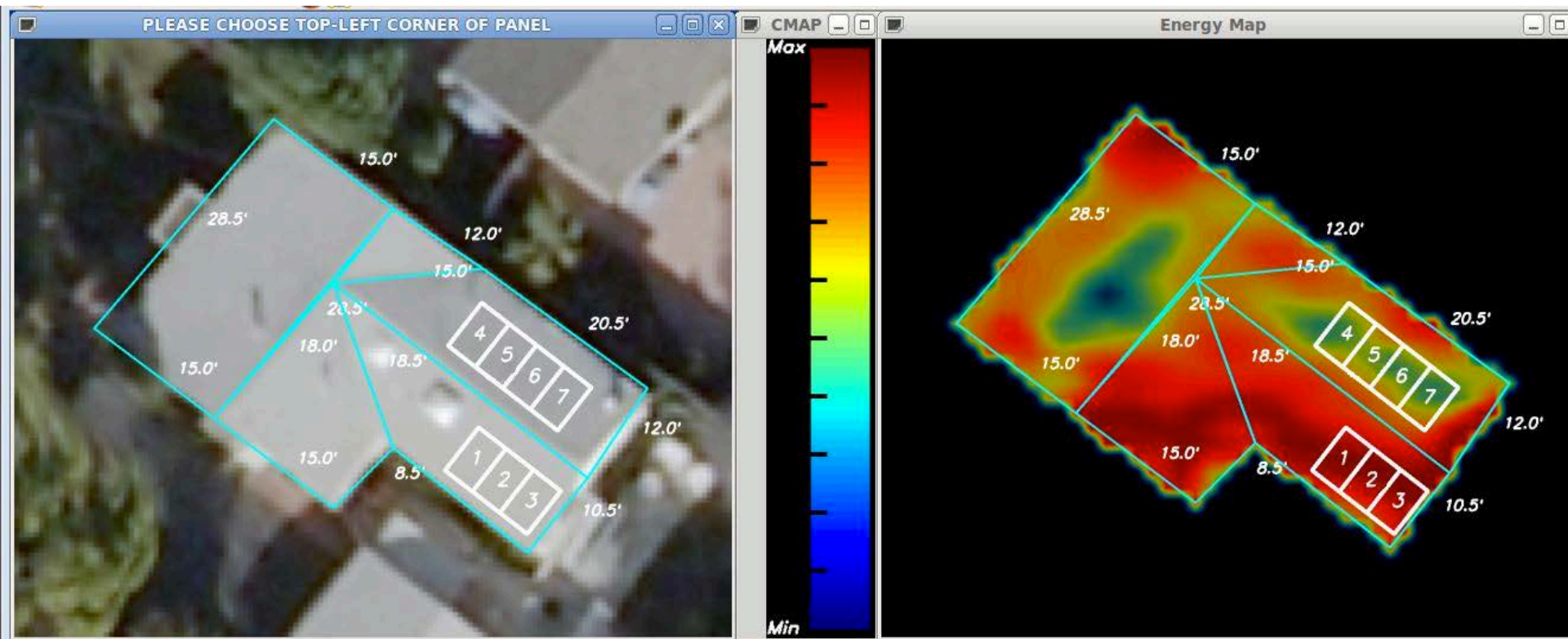
White Bear Lake, MN



WHAT'S MISSING #3

- Resource assessment and data mining moved to industry
- Greater interaction with small business to move program from government-initiated to business-initiated
- Align with US homeland security goals & functions





Solar Energy Siting Software
www.solar-red.net

PV Streetlights

- Sturdy – able to withstand hurricane winds and provide needed lighting when the electricity grid is down.

Dade County
Florida USA



After Hurricane Andrew, Picture facing N.W.

TSG VA Office





Good planets are hard to find.