



# The Stella Group, Ltd.

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*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, geexchange, 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 George Washington University, and appointed by Sec Locke onto the DOC RE/EE Advisory Committee thru June 2014.*

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Jan 16, 2014 - **Global investment in renewable energy in 2013 was \$254 billion, according to data released by Bloomberg New Energy Finance ..**

Renewable Energy: World Invested \$244 billion in 2012, Shift to Developing Countries  
The sister publications, REN21's Renewables 2013 Global Status Report and Frankfurt School – UNEP/BNEF's Global Trends in Renewable Energy Investment 2013 were launched June 12th, 2013.

Global Trends in Renewable Energy Investment 2013 was \$244 billion (including small hydro-electric projects) 2012 was the second highest year ever for renewable energy investments. There was a continuing upward trend in developing countries, with investments in the South topping \$112 billion versus \$132 billion in developed countries—a dramatic change from 2007, when developed economies invested 2.5 times more in renewables (excluding large hydro) than developing countries. The gap has now closed to just 18%.

Global demand for renewable energy continued to rise during 2011 and 2012, supplying an estimated 19% of global final energy consumption in 2011 (the latest year for which data are available), with a little less than half from traditional biomass.

In terms of power generation capacity, 2012 was another record year with 115 GW of new renewables installed worldwide, equivalent to just over half of total net additions. REN21's Renewables 2013 Global Status Report

*Traditional energy sources are in decline, while* **NATURAL GAS IS RESURGENT AND RENEWABLES CHARGE AHEAD.**



Natural gas, renewables and energy efficiency are

**GAINING SHARE AT THE EXPENSE OF TRADITIONAL SOURCES**, which face pressures in the form of environmental regulations, old age and uncompetitive economics relative to natural gas.



In 2012, the estimated total investment in U.S. clean energy was

**\$44.2 BILLION**



**31%**

Natural gas-fired power plants **PROVIDED 31% OF U.S. ELECTRICITY** in 2012, up from just 22% in 2007.



Renewable energy generation has grown to 12.1%.

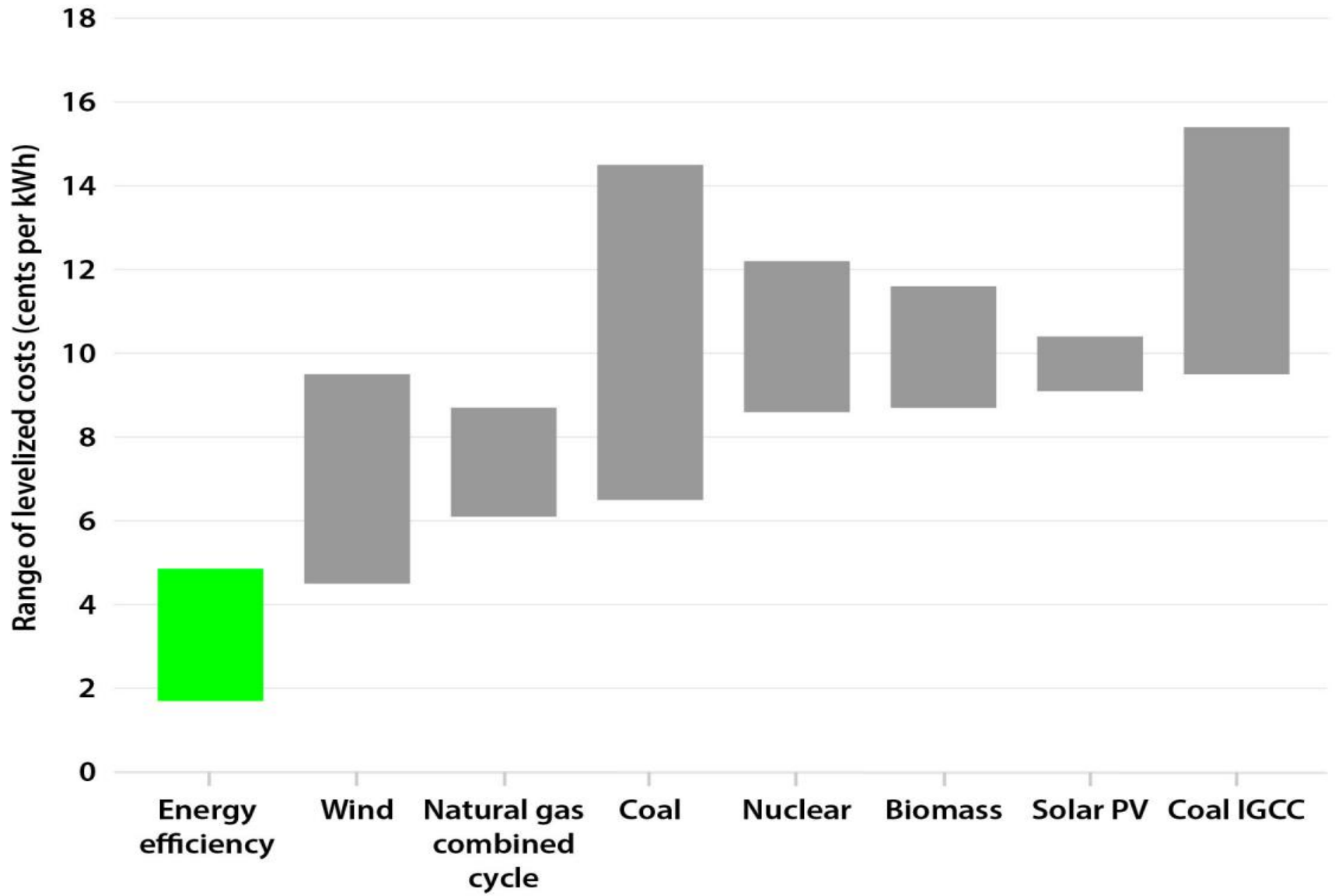


Renewables represented the **LARGEST** single source of new capacity growth in 2012.

# Data by Sector – Downstream Growth

| <b>Sector</b>             | <b>2012 Jobs</b> | <b>2013 Jobs</b> | <b>2012 - 2013<br/>Growth<br/>Rate</b> | <b>2012 - 2013<br/>New Jobs</b> | <b>2014<br/>Projected<br/>Employment</b> | <b>2013-2014<br/>Expected<br/>Growth<br/>Rate</b> |
|---------------------------|------------------|------------------|--|---------------------------------|--|---|
| Installation              | 57,177           | 69,658           | 21.8%                                  | 12,481                          | 84,331                                   | 21.1%   |
| Manufacturing             | 29,742           | 29,851           | 0.4%                                   | 109                             | 32,429                                   | 8.6%  |
| Sales and<br>Distribution | 16,005           | 19,771           | 23.5%                                  | 3,706                           | 22,585                                   | 14.2%   |
| Project<br>Development    | 7,988            | 12,169           | 52.3%                                  | 4,181                           | 12,529                                   | 3.0%  |
| Other                     | 8,105            | 11,248           | 38.8%                                  | 3,143                           | 13,064                                   | 16.1%   |
| <b>Total</b>              | <b>119,016</b>   | <b>142,698</b>   | <b>19.9%</b>                           | <b>23,682</b>                   | <b>164,938</b>                           | <b>15.6%</b>                                      |

Source: The Solar Foundation, *National Solar Jobs Census 2013*, January 2014.  
Available at: <http://tsfcensus.org>



# U.S. Department of Energy FY 2015 Statistical Table by Appropriation (dollars in thousands – OMB Scoring)

|  | FY 2013<br>Current<br>Approp. | FY 2014<br>Enacted<br>Approp. | FY 2014<br>Adjustment | FY 2014<br>Current<br>Approp. | FY 2015<br>Congressional<br>Request | FY 2015 vs. FY 2014 |               |
|--|-------------------------------|-------------------------------|-----------------------|-------------------------------|-------------------------------------|---------------------|---------------|
|  |                               |                               |                       |                               |                                     | \$                  | %             |
| <b>Energy Efficiency And Renewable Energy</b>              |                               |                               |                       |                               |                                     |                     |               |
| <b>Energy Efficiency and Renewable Energy RDD&amp;D</b>    |                               |                               |                       |                               |                                     |                     |               |
| Vehicle technologies.....                                  | 303,165                       | 289,737                       | ---                   | 289,737                       | 359,000                             | +69,263             | +23.9%        |
| Biomass and biorefinery systems RD&D.....                  | 185,190                       | ---                           | ---                   | ---                           | ---                                 | 0                   | N/A           |
| Bioenergy technologies.....                                | ---                           | 232,290                       | ---                   | 232,290                       | 253,200                             | +20,910             | +9.0%         |
| Hydrogen and fuel cell technologies.....                   | 95,844                        | 92,928                        | ---                   | 92,928                        | 92,983                              | +55                 | +0.1%         |
| Solar energy.....  | 269,050                       | 257,058                       | ---                   | 257,058                       | 282,300                             | +25,242             | +9.8%         |
| Wind energy.....   | 86,129                        | 88,126                        | ---                   | 88,126                        | 115,000                             | +26,874             | +30.5%        |
| Water power.....   | 54,687                        | 58,565                        | ---                   | 58,565                        | 62,500                              | +3,935              | +6.7%         |
| Geothermal technologies.....                               | 35,025                        | 45,775                        | ---                   | 45,775                        | 61,500                              | +15,725             | +34.4%        |
| Industrial technologies.....                               | 114,254                       | ---                           | ---                   | ---                           | ---                                 | 0                   | N/A           |
| Advanced manufacturing.....                                | ---                           | 180,471                       | ---                   | 180,471                       | 305,100                             | +124,629            | +69.1%        |
| Federal energy management program.....                     | 28,265                        | 28,248                        | ---                   | 28,248                        | 36,200                              | +7,952              | +28.2%        |
| Building technologies.....                                 | 204,601                       | 177,868                       | ---                   | 177,868                       | 211,700                             | +33,832             | +19.0%        |
| <b>Weatherization &amp; intergovernmental Program</b>      |                               |                               |                       |                               |                                     |                     |               |
| <b>Weatherization assistance program</b>                   |                               |                               |                       |                               |                                     |                     |               |
| Weatherization assistance.....                             | 128,879                       | 170,898                       | ---                   | 170,898                       | 224,600                             | +53,702             | +31.4%        |
| Training and technical assistance.....                     | 2,826                         | 2,998                         | ---                   | 2,998                         | 3,000                               | +2                  | +0.1%         |
| Total, Weatherization assistance program.....              | 131,705                       | 173,896                       | ---                   | 173,896                       | 227,600                             | +53,704             | +30.9%        |
| State energy program grants.....                           | 47,108                        | 49,970                        | ---                   | 49,970                        | 63,100                              | +13,130             | +26.3%        |
| Tribal energy activities.....                              | 9,421                         | 6,996                         | ---                   | 6,996                         | ---                                 | -6,996              | -100.0%       |
| Clean energy and economic development<br>partnerships..... | ---                           | ---                           | ---                   | ---                           | 14,000                              | +14,000             | N/A           |
| Total, Weatherization & intergovernmental<br>Program.....  | 188,234                       | 230,862                       | ---                   | 230,862                       | 304,700                             | +73,838             | +32.0%        |
| <b>Facilities and infrastructure</b>                       |                               |                               |                       |                               |                                     |                     |               |
| <b>National renewable energy laboratory (NREL)</b>         |                               |                               |                       |                               |                                     |                     |               |
| <b>Operation and maintenance</b>                           |                               |                               |                       |                               |                                     |                     |               |
| Operation and maintenance.....                             | 24,880                        | 45,973                        | ---                   | 45,973                        | 56,000                              | +10,027             | +21.8%        |
| Program direction.....                                     | 160,455                       | 162,000                       | ---                   | 162,000                       | 160,000                             | -2,000              | -1.2%         |
| Strategic programs.....                                    | 23,554                        | 23,540                        | ---                   | 23,540                        | 21,779                              | -1,761              | -7.5%         |
| Subtotal, Energy Efficiency and Renew. Energy RDD&D.....   | 1,773,333                     | 1,913,441                     | ---                   | 1,913,441                     | 2,321,962                           | +408,521            | +21.4%        |
| Subtotal, Energy Efficiency and Renewable Energy.....      | 1,773,333                     | 1,913,441                     | ---                   | 1,913,441                     | 2,321,962                           | +408,521            | +21.4%        |
| <b>Adjustments:</b>  |                               |                               |                       |                               |                                     |                     |               |
| Use of prior year balances (EE).....                       | -81,576                       | -2,382                        | ---                   | -2,382                        | -5,213                              | -2,831              | -118.8%       |
| Rescission of prior year balances.....                     | ---                           | -10,418                       | ---                   | -10,418                       | ---                                 | +10,418             | +100.0%       |
| <b>Total, Energy Efficiency And Renewable Energy.....</b>  | <b>1,691,757</b>              | <b>1,900,641</b>              | <b>---</b>            | <b>1,900,641</b>              | <b>2,316,749</b>                    | <b>+416,108</b>     | <b>+21.9%</b> |

## U.S. Department of Energy FY 2015 Statistical Table by Appropriation (dollars in thousands – OMB Scoring)

### Electricity Delivery & Energy Reliability

#### Electricity Delivery & Energy Reliability

|  |                |                |            |                |                |                |               |
|--|----------------|----------------|------------|----------------|----------------|----------------|---------------|
| Clean energy transmission and reliability.....                   | 23,393         | 32,383         | ---        | 32,383         | 36,000         | +3,617         | +11.2%        |
| Smart grid research and development.....                         | 19,968         | 14,592         | ---        | 14,592         | 24,400         | +9,808         | +67.2%        |
| Cybersecurity for energy delivery systems.....                   | 29,136         | 43,476         | ---        | 43,476         | 42,000         | -1,476         | -3.4%         |
| Energy storage.....  | 18,356         | 15,192         | ---        | 15,192         | 19,000         | +3,808         | +25.1%        |
| Permitting, siting and analysis.....                             | 6,626          | ---            | ---        | ---            | ---            | 0              | N/A           |
| National electricity delivery.....                               | ---            | 5,997          | ---        | 5,997          | 7,000          | +1,003         | +16.7%        |
| Infrastructure security & energy restoration.....                | 6,149          | 7,996          | ---        | 7,996          | 22,600         | +14,604        | +182.6%       |
| Program direction.....   | 25,568         | 27,606         | ---        | 27,606         | 29,000         | +1,394         | +5.0%         |
| <b>Total, Electricity Delivery &amp; Energy Reliability.....</b> | <b>129,196</b> | <b>147,242</b> | <b>---</b> | <b>147,242</b> | <b>180,000</b> | <b>+32,758</b> | <b>+22.2%</b> |

JUST DON'T LOOK AT BUDGET NUMBERS – LOOK AT  
MANAGEMENT AND APPROACH

1. ACCESS TO USDOE PROGRAM OFFICIALS AND US LABORATORIES

- no “portals” for dialogue and information sharing
- everything routinized with labs setting their” agenda \*\*\*  
(exception: ORNL Advanced Manufacturing)

WE HAVE A MAJOR CASE OF “NOT INVENTED HERE” SYNDROME



## 2. SMALL BUSINESS ENTREPRENEURS AND INDIVIDUAL INVENTORS ACTUALLY TURN OUT MORE COMMERCIALIZABLE TECHNOLOGY

- a. Other than Small Business Innovation Research Grants (SBIR) which is a very small part of the budget, small business gets funded anecdotally
- b. No collaborative R&D, no teaming companies and universities and national and state laboratories, and no incubators
- c. Failure to integrate with State and municipal business development and incubator programs, including The Administration's own "Impact Investment" Initiatives, or with SBA, DOC (EDA/ITA), or DOL (emerging jobs)

## **Analysis of Small Business Innovation in Green Technologies**

Research Summary (PDF) Analysis of Small Business Innovation in Green Technologies  
Anthony Breitzman and Patrick Thomas, 1790 Analytics, Haddonfield, NJ 08033 [46] pages.

Under contract no. SBAHQ-09-M-02. Purpose: Previous Advocacy-funded studies of small business patenting activity established the existence of a cohort of independent, for-profit innovative small firms with 15 or more patents over a five-year period. The studies also showed that innovative small firms had a higher percentage of emerging technology patents in their portfolios than their larger counterparts. A recent focus on “green” jobs, businesses, and technology led to this study of a subset of these innovative patent holders. This project was designed to highlight differences in the patent activity of small and large firms in green technologies and industries.

<http://www.sba.gov/sites/default/files/rs389.pdf>

3. US DOE NEEDS TO BLEND TECHNOLOGY SOLUTIONS NOT JUST  
HAVE SPECIALIZED TECHNOLOGY SILOS

1. CYBERSECURITY – UTILITY SCADAS, CELL TOWERS, PIPELINE PUMPS ETC.  
DEDICATED HYBRID RENEWABLE ENERGY SYSTEMS WITH STORAGE

2. NET ZERO & ZERO ENERGY BUILDINGS – HIGH VALUE ENERGY EFFICIENCY  
WITH STORAGE AND DISTRIBUTED GENERATION (RENEWABLE  
ENERGY, FUEL CELLS, CHP, AND NATURAL GAS

3. UTILITY-SCALE RENEWABLES – BLENDED ON-SITE, WITH BLENDED STORAGE  
OPTIONS AND “SMART SWITCHING” FOR GRID RESILIENCY

WHAT WE HAVE NOW ARE ANECDOTAL DEMOS AND PROGRAMS – NOT AN  
OPERATING PHILOSOPHY TO ADDRESS RESILIENCY, CYBERSECURITY, HIGHER GRID  
POWER QUALITY, NATIONAL SECURITY, AND BEING PREPARED FOR CHANGING  
CLIMATE AND FURTHER TERRORISM

NO DUMB QUESTIONS or ASK FOR INFORMATION:

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INCLUDING:

MY GWU LIST OF 26 TOP CLEAN ENERGY STUDIES

GLOBAL RENEWABLE ENERGY STATS

LIST OF CLEAN ENERGY CALCULATORS

REFERRALS TO INCUBATOR, HIGH IMPACT INVESTMENT,  
CERTIFICATION, AND CODES AND OTHER PROGRAMS

NOTE: JULY 25<sup>th</sup> in HOUSE CAUCUS ROOM – RENEWABLE ENERGY  
EXPO – STATE MAPS and REPORTS