

# Building US-Israel Energy Partnerships

## “BIRD Energy”



**The 2011 Israel Energy  
and Business Convention  
November 29, 2011**

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Director, BIRD Energy



# BIRD's Approach in a Nutshell

- BIRD helps in finding strategic partners (“matchmaking”)
- BIRD offers conditional grants for joint development on a risk sharing basis (private sector cost-share)
- BIRD funds **up to 50%** of each company’s R&D expenses associated with the joint project
- BIRD claims **repayments** as royalties only if commercial revenues are generated from the project (repayments: **up to 150%** of the original conditional grant, CPI adjusted)
- As an example of **mutual benefit**: *U.S. company* benefits from access to innovation and IP; *Israeli company* benefits from complementary required capabilities and market access (other combinations are possible, e.g., complementary technologies)

# BIRD Foundation

*BIRD = Binational Industrial Research and Development*

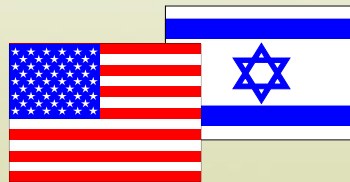
***Joint fund, established in 1977 as a joint initiative between the US and Israeli governments***

## *Mission*

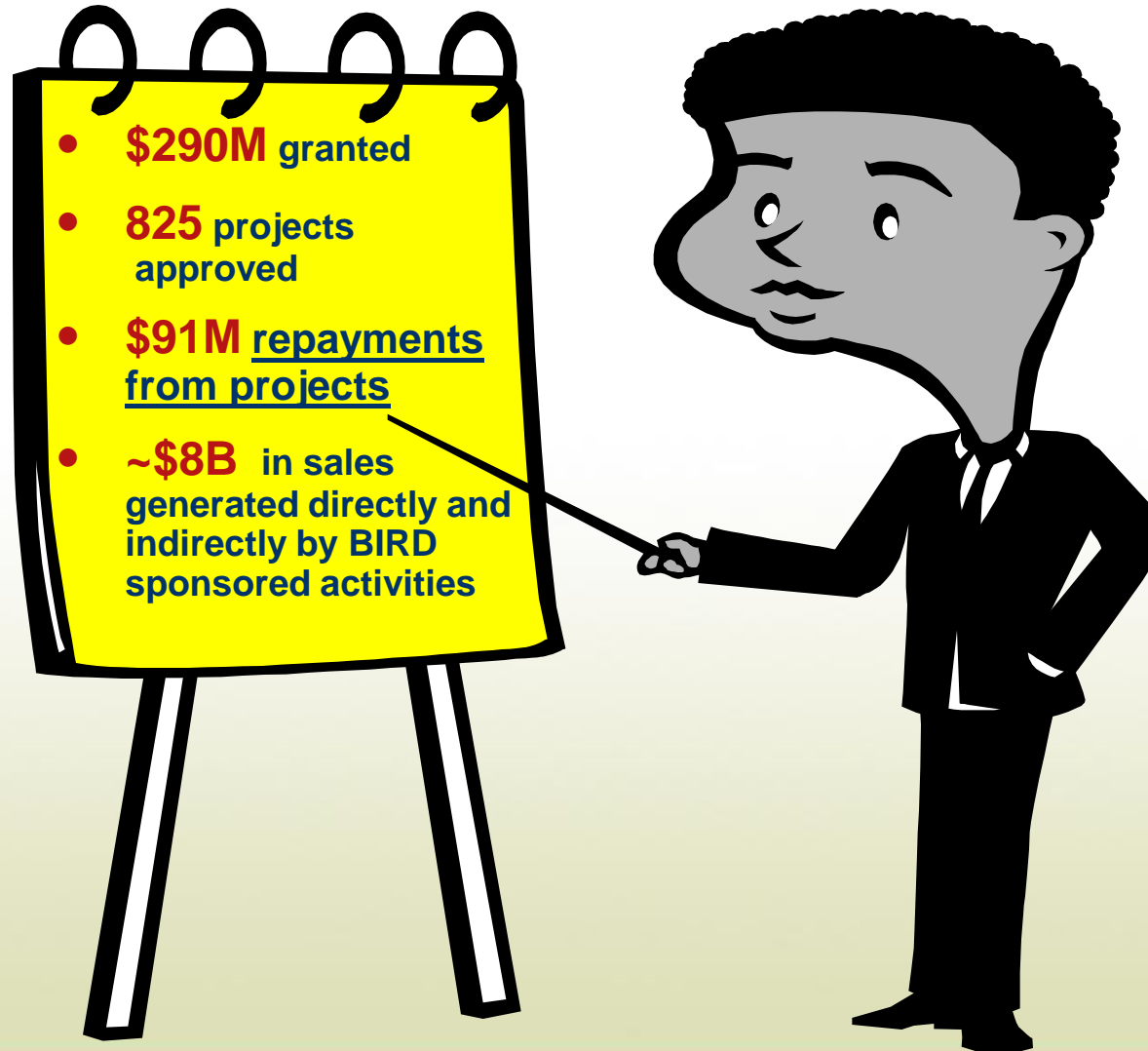
*To stimulate, promote and support joint (non-defense) industrial R&D of mutual benefit to Israel and the United States*

## *Funding*

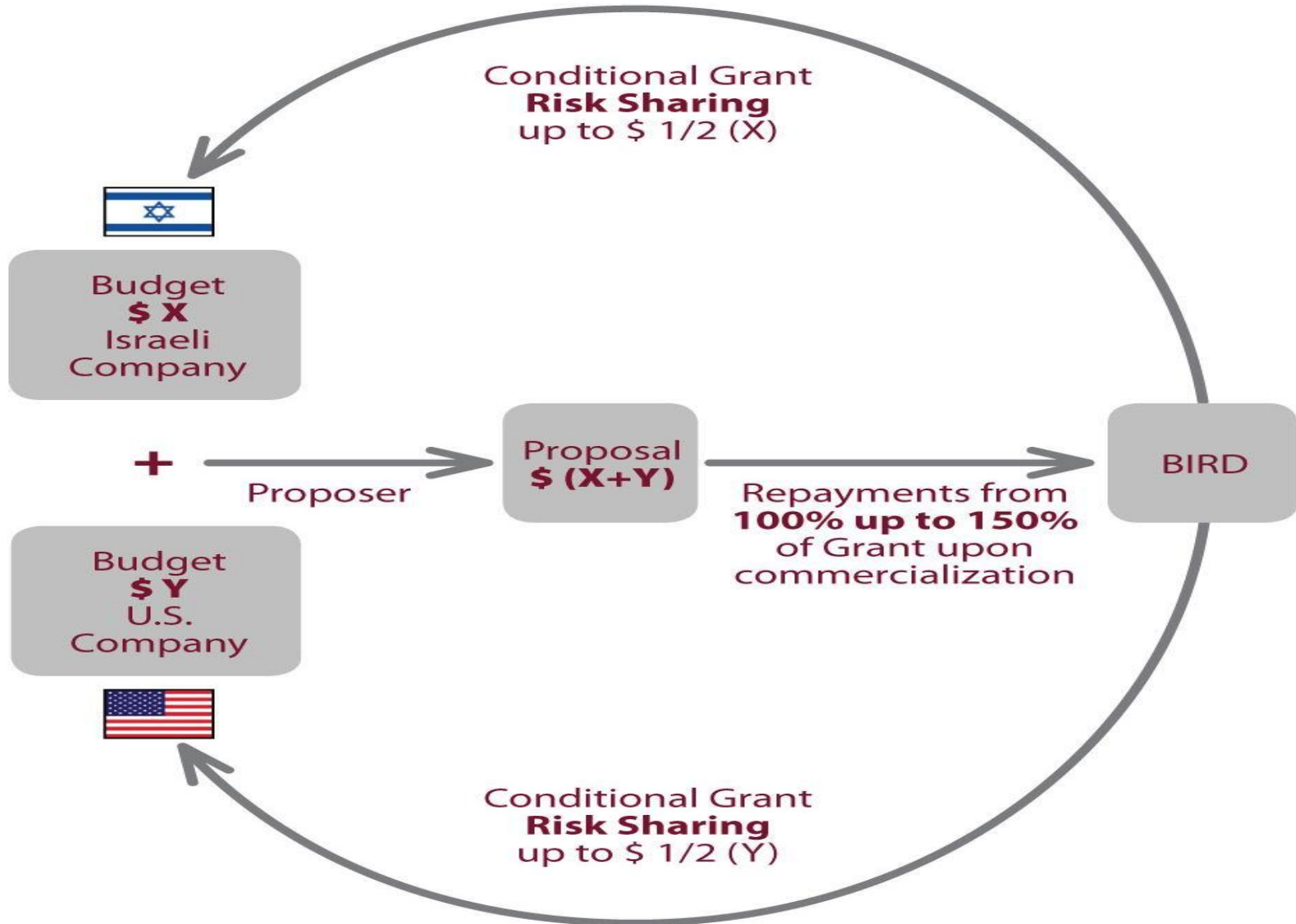
*Income from interest earned on \$110 million endowment grant and from repayments from successful BIRD projects*



# BIRD – Performance Summary



# The BIRD Model



# “BIRD Energy”



Ministry of National Infrastructures

**BIRD**  
Israel-U.S.  
Binational Industrial Research  
and Development Foundation



U.S. DEPARTMENT OF  
**ENERGY**

*Leveraging BIRD's Success  
and  
Experience*

# “BIRD Energy”: Leveraging BIRD’s Success and Experience

**BIRD**  
Israel-U.S.  
Binational Industrial Research  
and Development Foundation



Ministry of National Infrastructures

**BIRD**  
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Binational Industrial Research  
and Development Foundation



U.S. DEPARTMENT OF  
**ENERGY**

## **SEC. 917. UNITED STATES-ISRAEL ENERGY COOPERATION.**

*(a) Findings.—Congress finds that—*

*(1) it is in the highest national security interests of the United States to develop renewable energy sources;*

*(2) the State of Israel is a steadfast ally of the United States;*

*(3) the special relationship between the United States and Israel is manifested in a variety of cooperative scientific research and development programs, such as—*

*(A) the United States-Israel Binational Science Foundation; and*

*(B) the United States-Israel Binational Industrial Research and Development Foundation;*

*(4) those programs have made possible many scientific, technological, and commercial breakthroughs in the fields of life sciences, medicine, bioengineering, agriculture, biotechnology, communications, and others;*

**In  
Energy  
Independence  
and Security  
Act (2007)**

# “BIRD Energy” Implementation

- “BIRD Energy” uses the same principles and similar procedures as BIRD
- Scope: Renewable Energy and Energy Efficiency projects
- Management by the BIRD team, with minimal overhead
- Executive Committee for oversight: Assistant Secretary EERE\*, Director General MNI\* and a member of the BIRD Board of Governors (or their designees)
- Project reviewers appointed by DOE/EERE and by MNI

\* EERE: Energy Efficiency and Renewable Energy, U.S. DOE

\* MNI: Ministry of National Infrastructures, Israel



# “ BIRD ENERGY ”

## OPPORTUNITY TO SUBMIT U.S. - ISRAEL JOINT RENEWABLE ENERGY PROPOSALS

**BIRD**  
Israel-U.S.  
Binational Industrial Research  
and Development Foundation



The U.S. Department of Energy (DOE), the Israeli Ministry of National Infrastructures and the BIRD Foundation have established “BIRD Energy”:  
a program for U.S. - Israel joint renewable energy developments

“BIRD Energy” follows the same rules and procedures as BIRD.

Please refer to BIRD’s website for submission details - [www.birdf.com](http://www.birdf.com).

To be considered, a project proposal should include:

- ❖ R&D cooperation between two companies or cooperation between a company and a university/research institution (one from the U.S. and one from Israel).
- ❖ Innovation in areas such as: Solar Power, Alternative Fuels, Advanced Vehicle Technologies, Smart Grid, Wind Energy or any other Renewable Energy/Energy Efficiency technology.
- ❖ Significant commercial potential; the project outcome should lead to commercialization.

The maximum conditional grant is \$1M per project.

Timetable and deadlines:

1. Executive Summaries (using BIRD’s template) – **May 05, 2011**
2. Full Proposals (following BIRD’s detailed instructions) – **June 30, 2011**
3. Decisions – **September 2011**

**Decision:  
September 13,  
2011**

# DOE PR – 2011 Projects

BIRD  
Israel-U.S.



U.S. DEPARTMENT OF  
**ENERGY** | Energy Efficiency &  
Renewable Energy

## **DOE and Israel Announce \$3.1 Million in Cooperative Clean Energy Projects**

*September 26, 2011*

The U.S. Department of Energy (DOE) today highlighted a milestone in U.S.-Israel cooperation on clean energy technology. DOE and the Ministry of National Infrastructures of Israel (MNI) have selected four projects in California, Pennsylvania, and Washington to receive \$3.1 million under the 2011 Binational Industrial Research and Development (BIRD) Energy program. Each of the cooperative projects includes a U.S. and Israeli partner and addresses energy challenges and opportunities of interest to both countries, while focusing on commercializing clean energy technologies that improve our economic competitiveness, create jobs, and support innovative companies. The selected projects will leverage private sector cost-share for a total project value of \$8.46 million:

- Cima NanoTech, Caesarea, Israel and Integrated Photovoltaics, Inc. (IPV), San Jose, California have been selected for an award of up to \$800,000. The two companies will test and demonstrate a process for producing low-cost crystalline silicon solar wafers and solar cells that combines IPV's low-cost high-efficiency wafer technology with Cima Nano's electrode coating process. This project includes \$1.40 million in private sector cost-share.
- Ener-T International Ltd., Jerusalem, Israel and Halotechnics, Inc., Emeryville, California have been selected for an award of up to \$800,000. The companies will develop a high-efficiency concentrating solar thermal plant design using high-temperature molten salts as a heat transfer fluid and for energy storage. This project includes \$1.45 million in private sector cost-share.
- Greenlet Technologies, Tel Aviv, Israel and Viridity Energy, Philadelphia, Pennsylvania have been selected for an award of up to \$700,000. Greenlet and Viridity will jointly develop a WiFi-based load management system for residential and commercial buildings that can monitor and control individual appliances without the need for professional installation. The project includes \$1.3 million in private sector cost-share.
- Pentalum Technologies, Rechovot, Israel and 3Tier, Seattle, WA, have been selected for an award of up to \$800,000. The companies will develop and test a LIDAR-based system, which gathers data using lasers, to facilitate wind speed and power output forecasting in wind farms. This project includes \$1.2 million in private sector cost-share.



# More about BIRD Energy

## Specific Project Examples

# Enzymes for Biodiesel Production



**Transbiodiesel** is developing various technologies for the preparation of economically-affordable biocatalysts as an alternative to the conventional chemical catalysts



**Purolite** a leading manufacturer of specialty resins for the diverse industries, including for sugar, food, municipal water, petrochemical refining and BioFuels

**Project title:** The Development of an Enzymatic Process for Production of Biodiesel

**Joint development product:** new, highly active and stable immobilized lipase biocatalyst technology for the production of biodiesel.



# The Companies Perspective



NEWSRELEASE

## Enzymatic Biodiesel Resin

### PUROLITE & TRANSBIODIESEL SIGN WORLDWIDE AGREEMENT FOR ENZYMATIC BIODIESEL RESIN TECHNOLOGY

*Enzymatic biodiesel technology offers significant operational and economic benefits  
over traditional trans-esterification processes*

BALA CYNWYD, PA – Feb 2, 2010 – PuroLite and TransBiodiesel today announced a joint effort to manufacture and market enzyme loaded ion exchange resins to replace traditional trans-esterification processes.

“The biodiesel industry has been looking for a better way of converting oils and fats to biodiesel. With the introduction of this patent pending technology, significant economic and practical advantages are gained. Our enzyme loaded ion exchange resin replaces the use of sodium methylate and provides the simultaneous esterification of free fatty acid and trans-esterification of fats and oils. This enables biodiesel producers to overcome many of the downstream issues currently encountered”, said Don Brodie VP Operations, PuroLite.

# Biogasoline Production



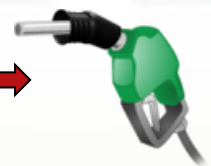
**HCL Cleantech's** technology is based on proprietary acid recovery replacement in a proven industrial process for the conversion of biomass to fermentable sugars



**Virent** was founded in 2002 based on catalytic, aqueous-phase reforming technology, named BioForming® which readily converts renewable plant sugars to biogasoline, other liquid hydrocarbon fuels, and chemicals

**Project title:** Wood Sugars for Biogasoline and Bioproducts Production

**Joint development product:** low cost cellulosic sugars to produce biogasoline



# The Companies Perspective

## **BIRD Energy Grant Awarded to Virent, HCL CleanTech**

January 4th, 2011 by [Foxy](#)

A \$900,000 BIRD Energy grant has been awarded to Madison, Wisconsin-based [Virent Energy Systems, Inc.](#) and Israel-based [HCL CleanTech](#) from the [BIRD Foundation](#) along with the U.S. Department of Energy and the Israeli Ministry of National Infrastructures. BIRD Energy is a program for the U.S. and Israel to jointly develop renewable energy.

[Virent](#) and [HCL](#) have partnered on a \$2.1 million project that combines HCL's proprietary lignocellulosic conversion technologies that produce cost competitive non-food sugars with Virent's BioForming technology that converts plant sugars into hydrocarbon molecules similar to those now refined from petroleum. These sugars can then be used as chemicals or as "drop-in" fuels for cars, trucks, trains, and aviation that can be transported using existing pipelines.

"Economically converting plentiful cellulosic biomass into renewable, fungible hydrocarbon fuels and products will enable broad market acceptance and is the most realistic alternative to displace petroleum and create a clean energy transportation sector in the coming years," said Lee Edwards, Virent CEO. "Virent

has proven it can transform cellulosic, non-food sugars into environmentally superior hydrocarbon fuels with the same energy content and performance as petroleum fuels. "Utilizing HCL CleanTech's cost-effective biomass hydrolysis technology to provide inexpensive cellulosic sugar feedstocks may be a key component of a complete and sustainable biofuels solution."

# Energy Efficiency for Buildings



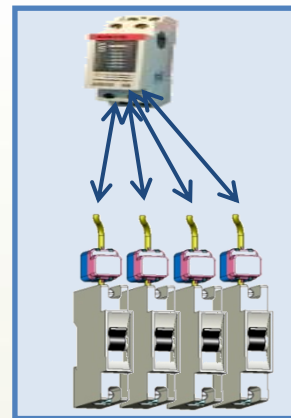
**Panoramic Power** develops low-cost, high granularity, energy visibility components and platforms for in-building circuit level electricity monitoring



**Mazzetti Nash Lipsey Burch (MNLB)** is nationwide full-service consulting and design firm focused on the engineered systems of buildings, and specifically on power systems

**Project title:** Wireless Miniature Self Powered Current Sensor

**Joint development product:** A self powered, wireless current sensor for circuit level electricity monitoring within a building and system installation at a customer site.





# The Companies Perspective

## **Panoramic Power and M+NLB Sign Collaboration Agreement**

Collaboration goal, partially funded by BIRD Energy, is to develop and test a low-cost, nonintrusive, real-time energy monitoring platform

Tel Aviv, Israel, January 25, 2011 --- Panoramic Power Ltd, a young Israeli venture, has announced today that it has signed an agreement with M+NLB to develop and test a low-cost, nonintrusive, real-time energy monitoring platform designed to help businesses save money, reduce energy use, manage sustainability initiatives and improve building operations.. The collaboration is supported by the Israel-U.S. Binational Industrial Research and Development Foundation (BIRD Energy Program).

Mr. Walter Vernon, M+NLB's CEO said, "M+NLB collaborates with leading organizations to research and develop frameworks and progressive solutions to help our clients and make the world a better place. Over the past few years, we have been specifically focusing on projects that include alternative methods of ventilation, solar power, greenhouse gas measurement, energy benchmarking, and energy audits that provide recommendations and incentives. Our innovative, consistent, and personal approach provides our clients with almost 50 years of skills and knowledge. The Panoramic platform and solution is very well aligned with the market needs and will enable us to offer our customers a new, cost-effective and non-intrusive solution with a quick return on their investment."

"It is a fabulous opportunity to work with M+NLB and the BIRD Foundation and we are enthusiastic about the project at hand," said **Dr. David Almagor, CEO of Panoramic Power.**

# Thank You!

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