The Role of Research, Education and Economics (REE) Efforts in Energy

Presented to

ARS Bioenergy
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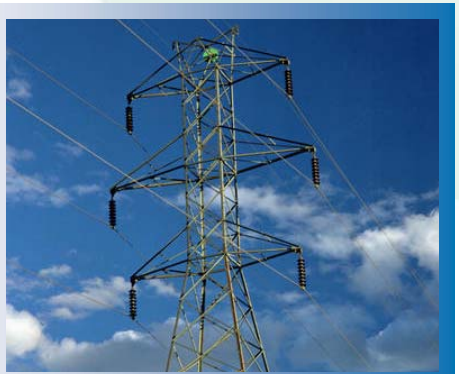
USDA
Energy Science and Education
Strategic Plan

Role

- ***Lead the production and efficient use of agriculture-based energy . . . for the benefit of rural communities and the Nation***





Vision *(External to USDA)*

"Growing a clean, efficient, sustainable energy future for America"

We have a vision that in five years the U.S. will have:

- Sustainable, secure, renewable energy sources
- Agriculture-based energy that enhances stewardship of our natural resources
- Vibrant and energy-efficient rural communities

Vision *(Internal to USDA)*

"USDA – a recognized leader in innovative energy solutions"

We have a vision that in five years the USDA will have:

- A workforce with expertise and foresight to address energy challenges
- Robust partnerships with Federal agencies, universities and the private sector
- A fully integrated, systems approach to design national and regional solutions

Goals
(Our Focus for the Next 5 Years)

Mission Goals

- Increase production of agriculture-based energy and products
- Promote conservation and efficient use of energy across America
- Foster sustainable agricultural systems and rural communities

Goals
(Our Focus for the Next 5 Years)

Enabling Goals

- Develop clear leadership roles and a high performing organization and networks
- Attract, develop and retain a diverse, high quality, motivated workforce for the nation
- Develop and deploy fully integrated tools, systems and technologies
- Build strong partnerships to collaborate and leverage capabilities and resources

Goal 1: Increase production of renewable, agriculture-based energy

Results by 2012:

- **High quality, cost effective, cellulosic feedstocks are produced**
- **3 scalable conversion technologies operate in different regions**
- **Comprehensive feedstock databases are publicly accessible**
- **Sustainable, cost-effective harvesting, transportation and storage logistics exist**

Key Strategies:

- **Assemble a critical expertise to develop two specific energy biomass crops**
- **Assure biomass energy crops are regionally optimized**
- **Identify & fund professional teams which will develop production, harvesting, storage and conversion technologies and methods**
- **Partner with state and federal agencies (i.e., DOE for scalable technologies, Sungrant and DOE on regional biomass studies)**
- **Leverage existing agricultural production expertise and technology**

Goal 2: Promote conservation and efficient use of energy across America

Results by 2012:

- **50% of US agriculture producers will have completed an Energy Education Program**
- **Energy intensity of agricultural production reduced by 10%**
- **Awareness of energy in the agriculture sector is dramatically increased through national awareness campaigns**
- **Energy conservation ethic has been established across the U.S.**

Key Strategies:

- **Lead the establishment of a national energy extension network in partnership with Land Grant Universities and federal agencies (i.e., DOE)**
- **Incorporate energy analysis on 50% of the REE programs**
- **Develop & publicize decision support tools for home & on-farm energy conservation**
- **Develop and launch a national energy awareness contest**
- **Co-sponsor a second national energy awareness contest**
- **Establish an energy garden at the National Arboretum – link this to a national conservation group**

Goal 3: Foster sustainable agricultural systems and rural communities

Results by 2012:

- **Every farmer producing energy crops follows an REE science-based conservation plan**
- **Environmental and economic impact of bioenergy production will have been conducted on 80% of the U.S. cropland**
- **Decision tools are available and used by ALL farmers and rural communities anticipating bioenergy production systems**

Key Strategies:

- **Establish framework to optimize sustainable bioenergy production**
- **Build and assess databases to capture core elements of impacts of sustainability**
- **Develop mitigation and decision support systems**
- **Utilize tools and partnerships (NRCS) to inform decisions at local, regional and national level**

Goal 4: Develop clear leadership and a high performing organization and network

Results by 2012:

- **USDA Energy Science and Education Strategic Plan recognized for its innovation across REE, USDA, Congress and University Community**
- **USDA Energy Science and Education Strategic Plan & programs are incorporated into US national energy strategy and action plans**
- **Successful implementation of all initiatives with outcomes achieved**

Key Strategies:

- **Align resources and integrate plan initiatives across REE intramural and extramural programs**
- **Take full advantage of USDA's communication infrastructure**
- **Promote plan to existing energy committees and initiatives (e.g., ABBREE, BBCC, Energy Council, BRDi Board, NAREEEAB, BMTAC)**
- **Convene annual REE bioenergy summit to maintain buy-in of plan and track implementation of programs**

Goal 5: Attract, Develop and Retain a Diverse, High-Quality, Motivated Workforce for the Nation

Results by 2012:

- **Triple the number of students in bioenergy education programs**
- **Every high school student aware of bioenergy concepts and agriculture's role**
- **Expertise available to implement USDA extension energy programs across all states**

Key Strategies:

- **Establish and publicize a roadmap of educational opportunities that will lead to a career in bioenergy**
- **Add 10 graduate and postgraduate grants to existing programs with a focus on bioenergy**
- **Increase number of REE bioenergy curriculum development grants**
- **Establish and increase REE bioenergy internship programs**
- **Sponsor training for existing USDA and extension staff**

Goal 6: Develop and Deploy Fully Integrated Tools, Systems and Technologies

Results by 2012:

- **A single portal for data systems supporting comprehensive, economic and environmental models that address the key issues and guide decision makers**
- **Produce an integrated feedstock conversion and logistic system**
- **Life cycle analysis of three potential production systems**

Key Strategies:

- **Conduct meta-analysis that identify what exists, what is needed, and determine accessibility**
- **Develop geospatial analyses capable of addressing alternative scenarios incorporating estimated costs of feedstocks, transportation, conversion, water use, etc.**
- **Bring modeling efforts together periodically to evaluate and develop standards for data systems and discuss future needs**
- **Partner with key stakeholders to design, implement and publicize new tools & systems**

Goal 7: Build Strong Partnerships to Collaborate and Leverage Capabilities and Resources

Results by 2012:

- **A strong network of formal partners with a shared vision**
- **Vibrant & effective public & private partnerships focused on specific issues with defined scopes exists at the national, regional, state & local level**
- **Organized education partnerships including youth and adult education as well as college curriculum are in place**
- **Well established marketing partnerships with scientific, educational and industrial organizations are functioning**

Key Strategies:

- **Demonstrate incentives for partnerships with prospective and current partners by surveying what has worked historically**
- **Align internal agencies then identify potential external partners base on shared vision and needs on specific topics**
- **Initiate joint planning that will result in beneficial results through collaborative work**


$E=mc^2$

...ENERGY...

Opportunity

and

Responsibility

FOR

USDA

Science

and

Education

Programs