



Organization of  
American States



**MCGA**  
Stewardship and Integrity

## **EFFICIENCY : SUSTAINABILITY : RESILIENCE**

A proposal to adapt new utility business models to provide clean energy services to BEL customers

Supporting Belize's Horizon 2030 sustainable goals

Prepared for the Ministry of Energy, Science, Technology, and Public Utilities by McGeown Associates, LLC. under contract to the Organisation of American States

Contact: [dmcgeown@mcgeaonassociates.com](mailto:dmcgeown@mcgeaonassociates.com)

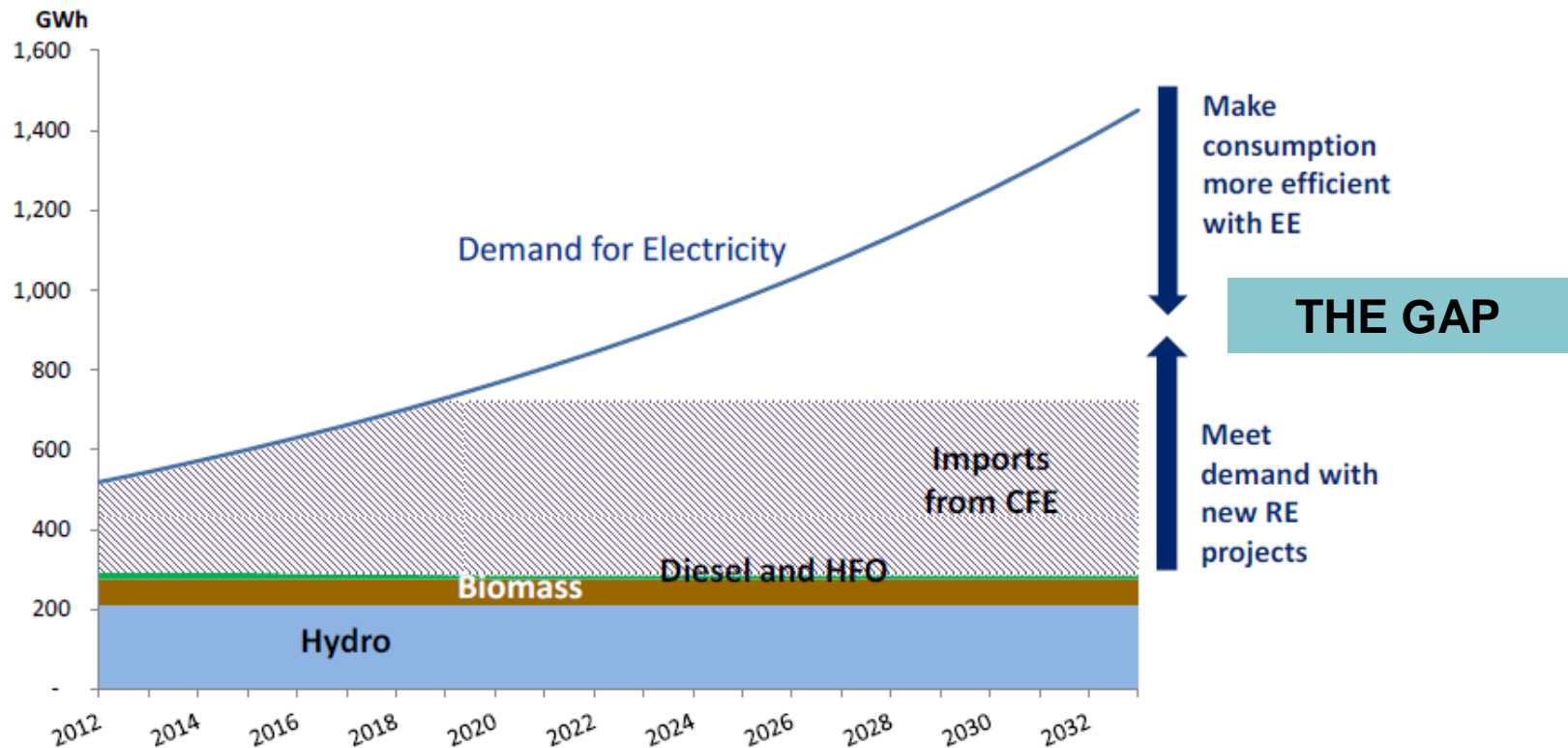
22 September 2015

# Bottom Line Up Front

- We must take bold steps now to transform the energy sector to achieve the sustainable goals of Horizon 2030
- The MESTPU will encourage the PUC to permit BEL to offer its customers clean energy services
  - BEL becomes a primary implementation arm of the National Sustainable Energy Strategy (NSES)
  - BEL adds a new self funding energy services division that engages its customers to reduce energy intensity and to save both parties money
  - BEL leverages its financial position to serve all, to ensure even the poorest citizens have access to affordable clean energy including financing options
- **IT IS THE RIGHT THING TO DO**

# Belizean Growth with Clean Energy

Figure 2.1: The Opportunity for Sustainable Electricity



Source: BEL's 2009 expansion plan

# The Economic Opportunity

- FILLING THE GAP ENHANCES THE ECONOMY
- Adapting BEL's business to the new energy services model will:
  - Unlock the Energy Efficiency and Renewable potential for Belize
  - Improve the quality of life for all
  - Build local skills, create jobs, and open up export opportunities
  - Facilitate clean energy growth, not fueled by fossil energy
  - Promote efficient buildings for new developments
  - Release Belize's fossil fuel resources for export
  - Facilitate microenterprises in rural areas
  - Develop Belize's Eco Tourism brand
  - Enhance Belize's image as a leader in the region

# Serving Those Most In Need

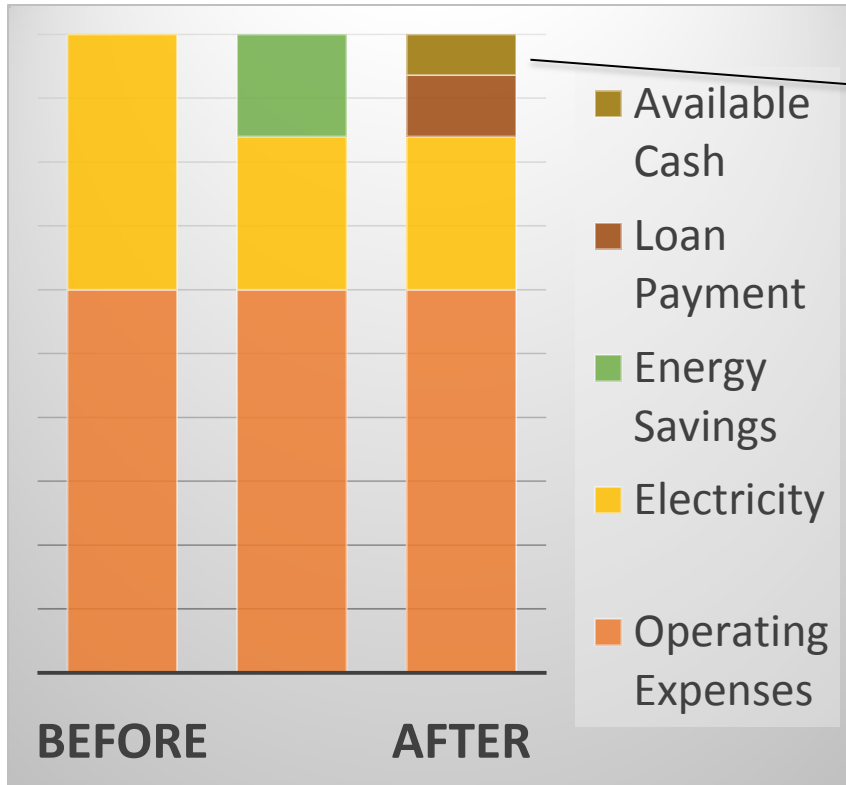
- BEL services will improve quality of life by providing poorer customers will access to affordable high efficiency lighting, appliances and building envelope interventions that enhances comfort
  - This can only be achieved by aggregating all customers
- Utilities are established as regulated monopolies to ensure that all are treated fairly
- For many we will increase electricity use and reduce kerosene
- In other countries the poor have tended to subsidize clean energy programs
  - e.g. Solar net-metering and feed-in-tariffs provide benefits ONLY to those who own a building and can afford to buy, or lease solar. The costs for these programs are shared among a now smaller pool of customers paying into the system

# Impacts on Belizean consumers

- BEL and MESTPU to provide access that is not otherwise affordable
- Simple tips to save energy and water
- Lower electricity bills
- Affordable quality of life enhancements
  - Reduce/eliminate kerosene
  - Enables access to affordable appliances, lighting, fans air conditioning
  - Eliminate cheap inefficient equipment that does not last



# Impact on Customers



Building related expenses

Net savings make life more affordable

- Customers can forecast and flatten their energy and water expenditures.
- Energy and water projects reduce default risk on other loans.

# Funding EE – the basic problem

- How do we find credit capacity to finance energy efficiency?
  - Customers don't have spare cash to invest in clean energy
  - Banks don't trust customer credit for EE
  - BUT credit for the same customers to buy a generator is easier through the utility
  - WHY NOT use the same credit capacity for EE investments
- Use the credit from a customer's promise to pay a utility bill to finance all clean energy projects



# Applying Energy Efficiency To All

Grants

MESTPU + BEL Energy Services

Program minimum standards for all participants  
Frequent updates by MESTPU  
Program participants **MUST** complete a comprehensive assessment.

Loans

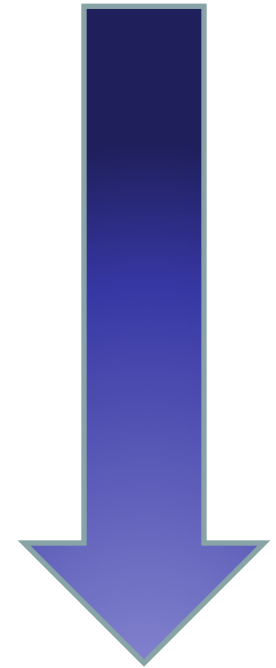
Leases

Cash

MESTPU + Bureau of Standards + Customs

Legislate mandatory minimum standards  
Captures high end/ second hand imports  
Infrequent updates  
Limited enforcement resources

Low income



Wealthy

# Why BEL?

- The proposed business is consistent with BEL's mission:
  - It improves electricity reliability, it is sustainable, it lowers cost, stimulates national development, and improves quality of life
- To achieve the Horizon 2030 goals all sectors of the community must be served
- BEL is best positioned to:
  - Serve all customers fairly
  - Use local resources
  - To retain cash in Belize and improve the economy
- BEL can adapt quickly, any other course of action adds time and risk to achieving national goals

# Value Proposition for BEL(1)

- More Customer-centric
  - Much better understanding of how customers use energy, and therefore able to respond to customers need;
  - Build a much deeper relationship with customers, which can open up opportunities for future growth (e.g., Distributed RE, Smart homes, Data services, Electric mobility, etc.);
- Enhancing Economic, Environmental and Social Capital
  - Ability to offer low-carbon energy options that support the Belize's Energy and Climate goals;
  - Ability to offer clean production solutions that support industry competitiveness
  - End-use Efficiency often has the best economic fundamentals

# Value Proposition for BEL(2)

- Strengthen Utility's Long-term Financial Health
  - Tighter integration between utilities cost drivers (e.g., high cost peak energy, capacity deferrals) and behind-the-meter energy. Also gives the utility the ability to use demand response in its operations;
  - Diversified revenue stream that allows the utility to hedge against shifts in its primary revenue source of electricity sales (e.g., changes to Cost of Service/Rate of Return regulations, impact of EE and DG);
  - Ability to make selective investments in distributed resources that defer or eliminate the need for costly distribution investments and/or enhancing grid resilience.
  - BEL will directly be able to impact the competitiveness of commercial and industrial customers thereby driving economic growth creating the conditions for a prosperous BEL

# THE USVI ENERGY SERVICES MODEL



Changing the way we use and save energy

***HELP TO MANAGE ENERGY BILLS***

# Leveraging the USVI experience



- Energy Development for Island Nations (EDIN)
  - A pilot program funded by the US DoE and Insular Affairs
  - The USVI goal is 60% reduction in fossil fuel use by 2025
  - Washington led EDIN to stimulate development with a USVI roadmap to 60x25, it is now branded Vlenergize led by Virgin Islanders through the USVI Energy Office (VIEO)
- Implementing Vlenergize through WAPA
  - Vlenergize is managed by an Energy Action Team, co-led by the Director of the VIEO and the CEO of the utility WAPA
  - Many Virgin Islanders could not afford to participate, a small community must aggregate customers and credit to provide access to all, or only the wealthy will participate
  - The utility is best placed to understand and serve all customers



# The base model: VI WAPA

Support agencies



VIEO



Governor



PSC

POLICY &  
GUIDANCE



VI WAPA

EXECUTION

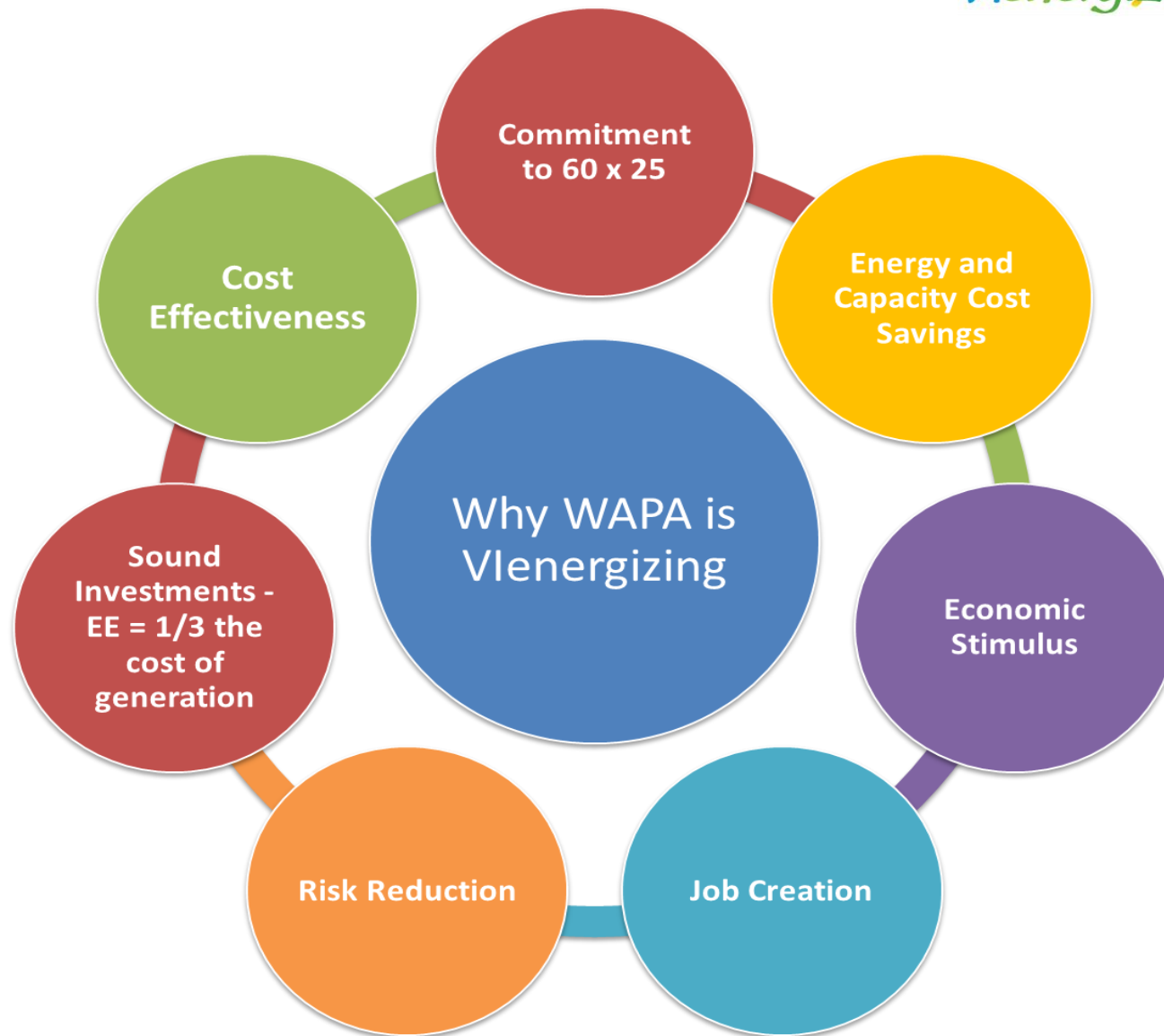


Distribution

Generation

Vlenergize Services Network

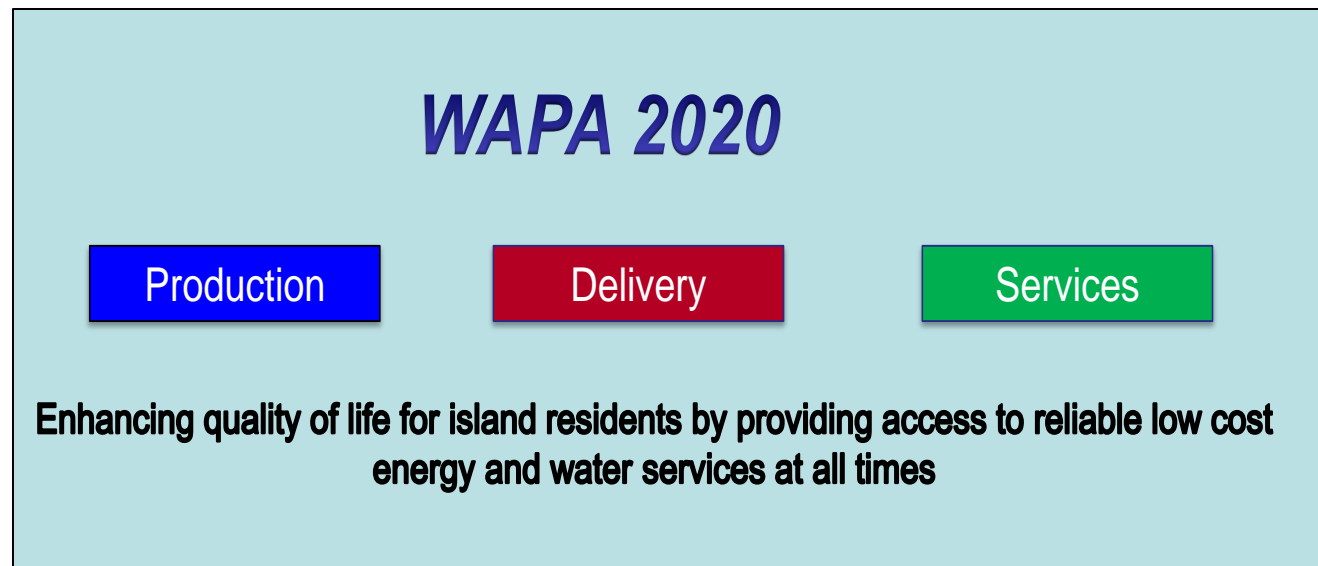
**CUSTOMERS**





# WAPA's Energy Service Vision

- WAPA services will enhance quality of life for island residents by providing access to reliable low cost energy and water services at all times.
- WAPA services will be:
  - Affordable
  - Dependable
  - Sustainable



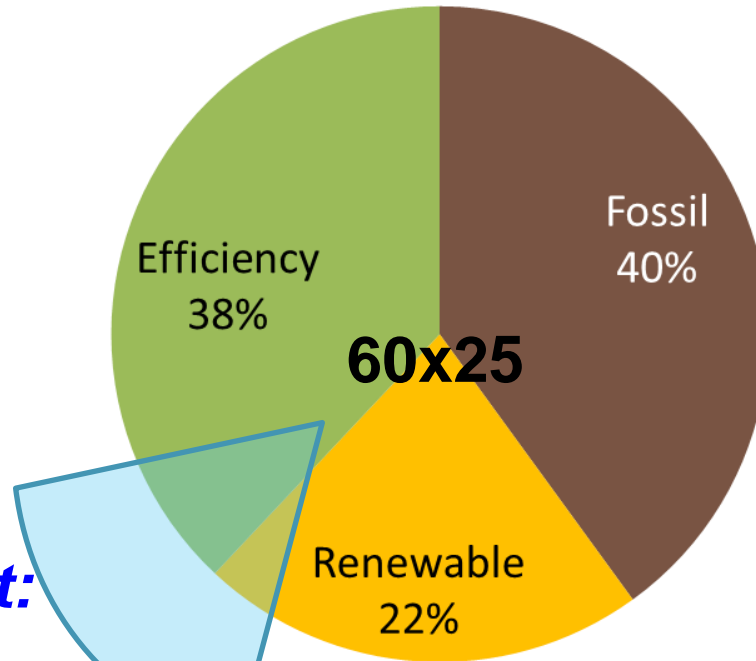
# What is Vlenergize Services?

## *TRUST, RELIABILITY, FAIR PRICING, INDEPENDENT ADVICE*

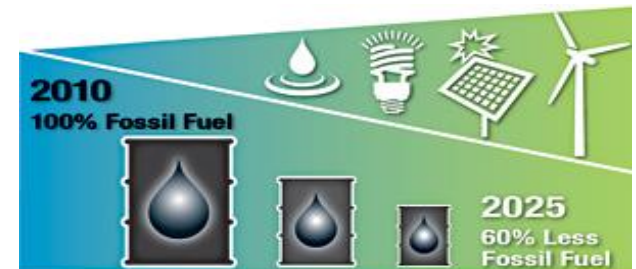
The purpose of this Vlenergize Services is to help Virgin Islanders to change behavior and make investments that reduce energy costs.

A cornerstone of the VleS plan is the implementation of successful energy-saving projects **through a network of local suppliers** that have committed to ethical standards and that provide products and services that meet standards **appropriate for the Virgin Islands environment.**

# The 60x25 goal : Reducing dependency on oil



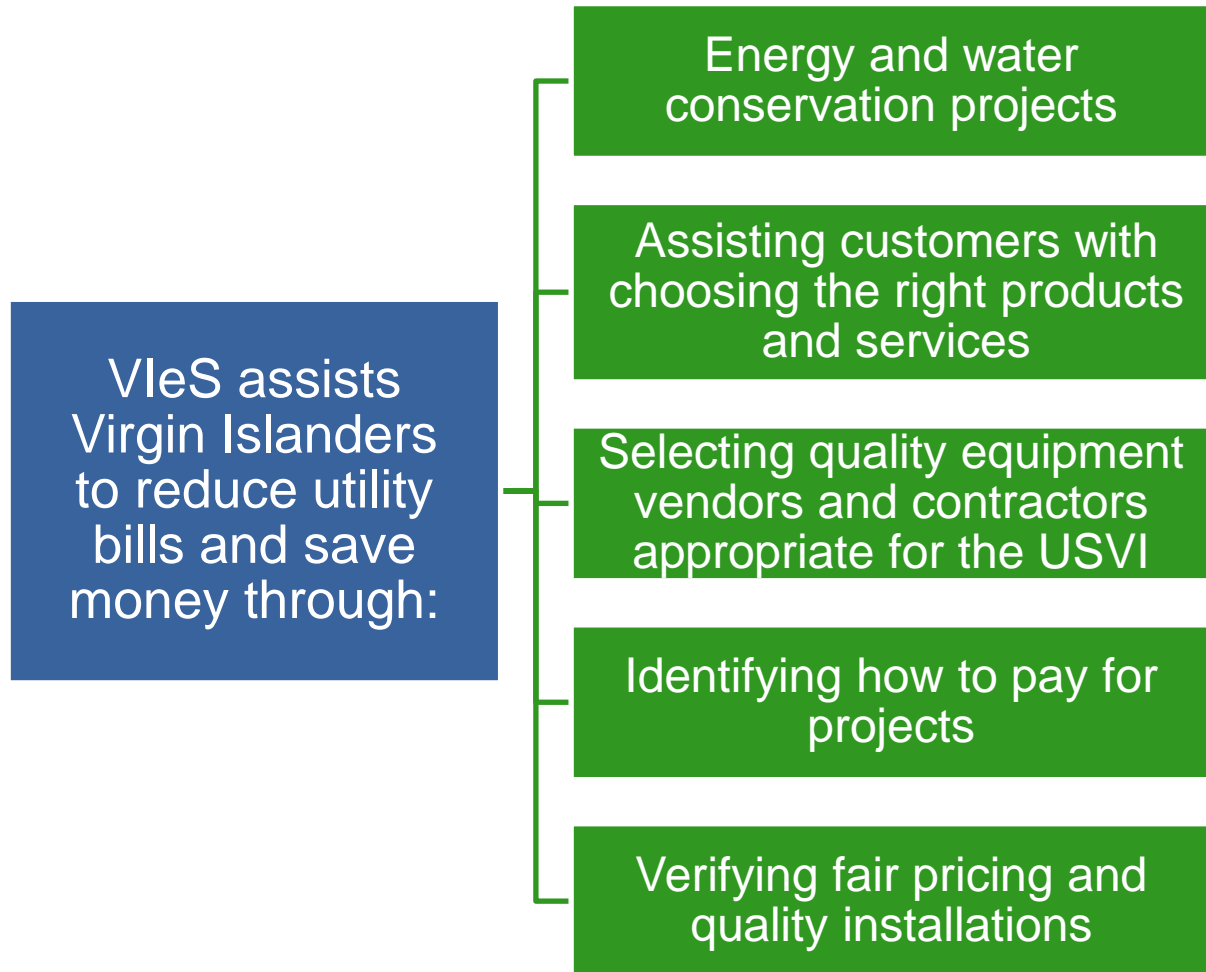
**VleS target:  
building  
uses**



*Conserve and Convert*

# What is Vlenergize Services?

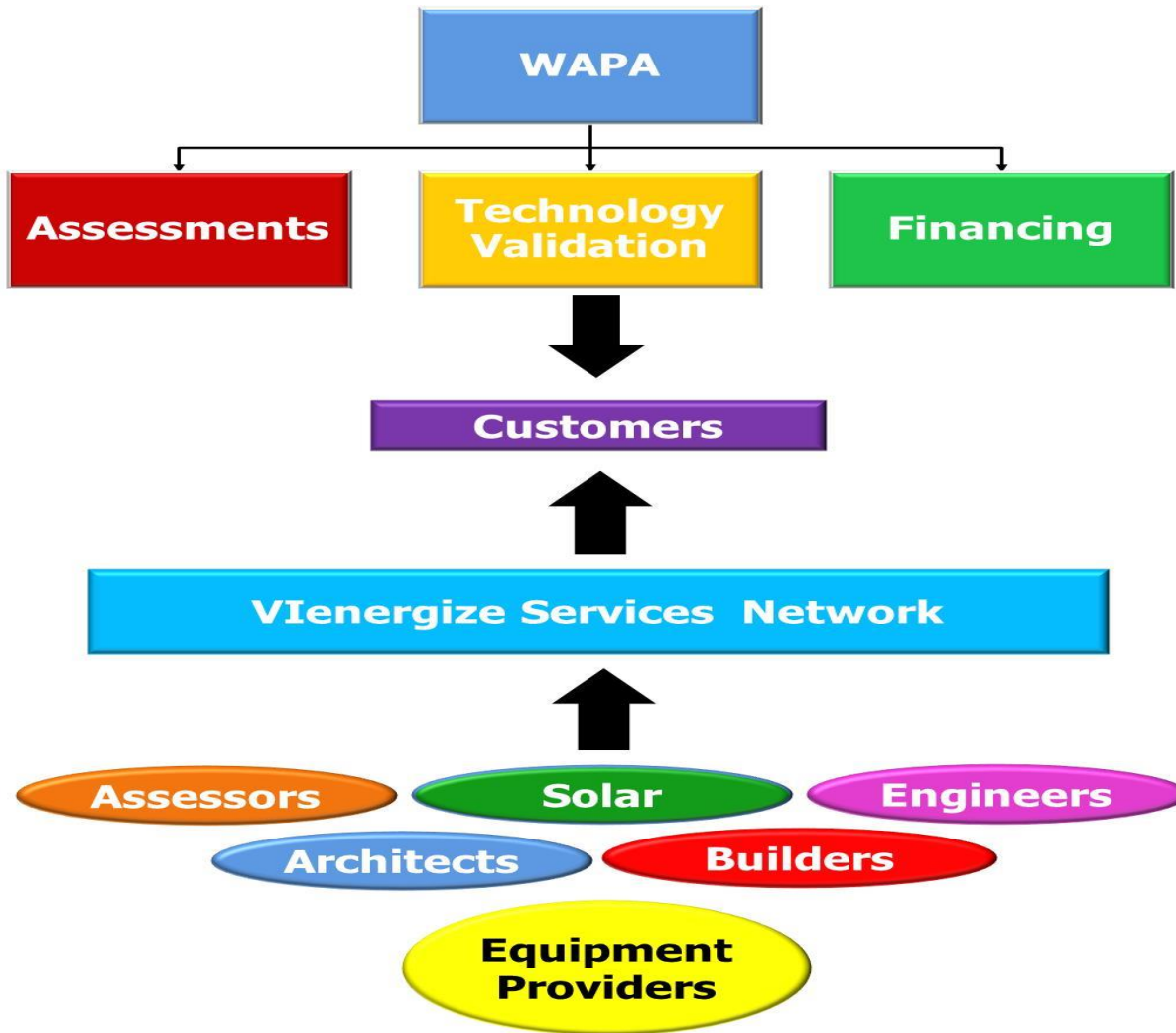
*TRUST, RELIABILITY, FAIR PRICING, INDEPENDENT ADVICE*



# VleS Product Line

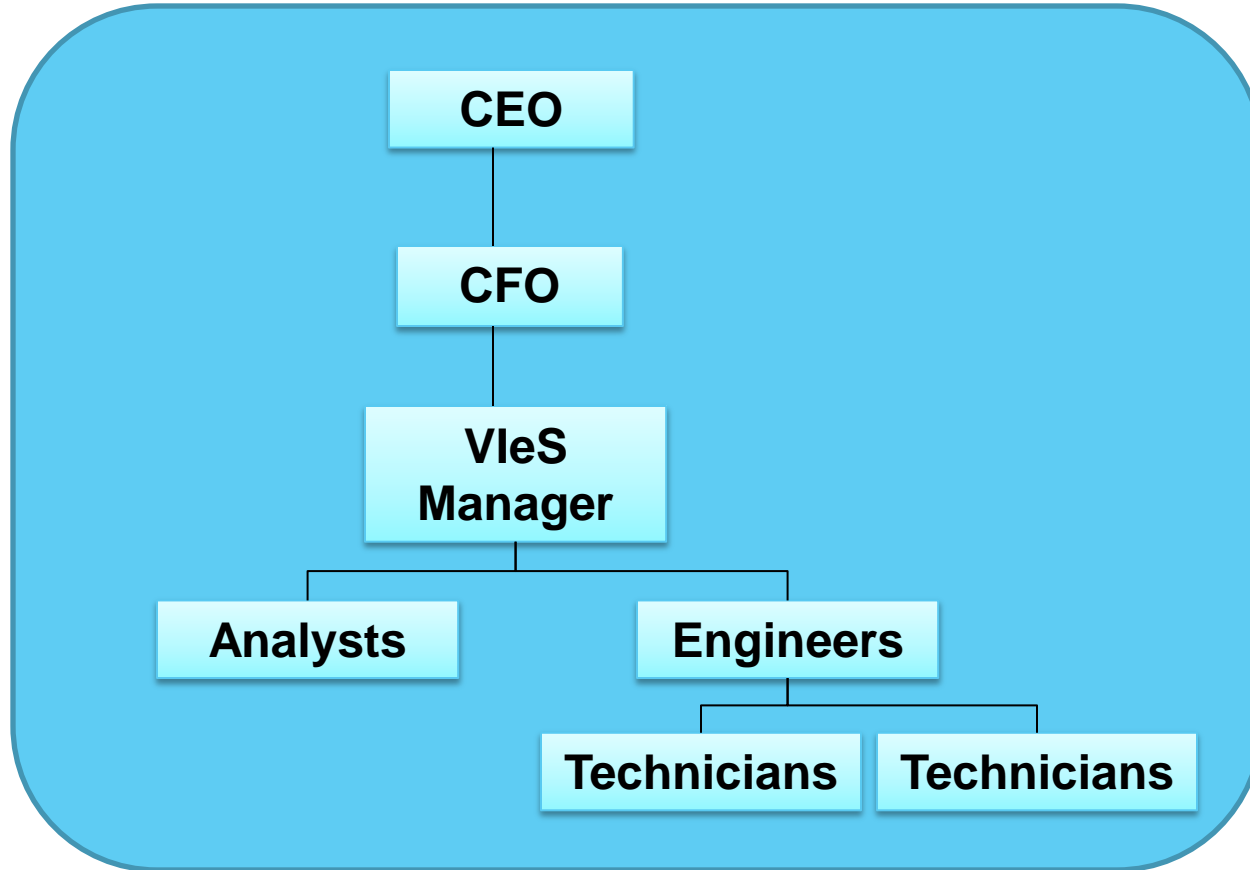
- VleS is organized around core service capabilities:
  - **Assessments** : help identify cost effective energy projects at customer locations
  - **Project management** : helps customers specify, select, and install appropriate equipment and suppliers
  - **Operations and maintenance** : helps customers optimize value and reliability of energy and water systems
  - **Financing** : helps customers obtain funding for projects at reasonable rates
  - **On-site power (future)** : customer generation and power quality services ensuring reliability

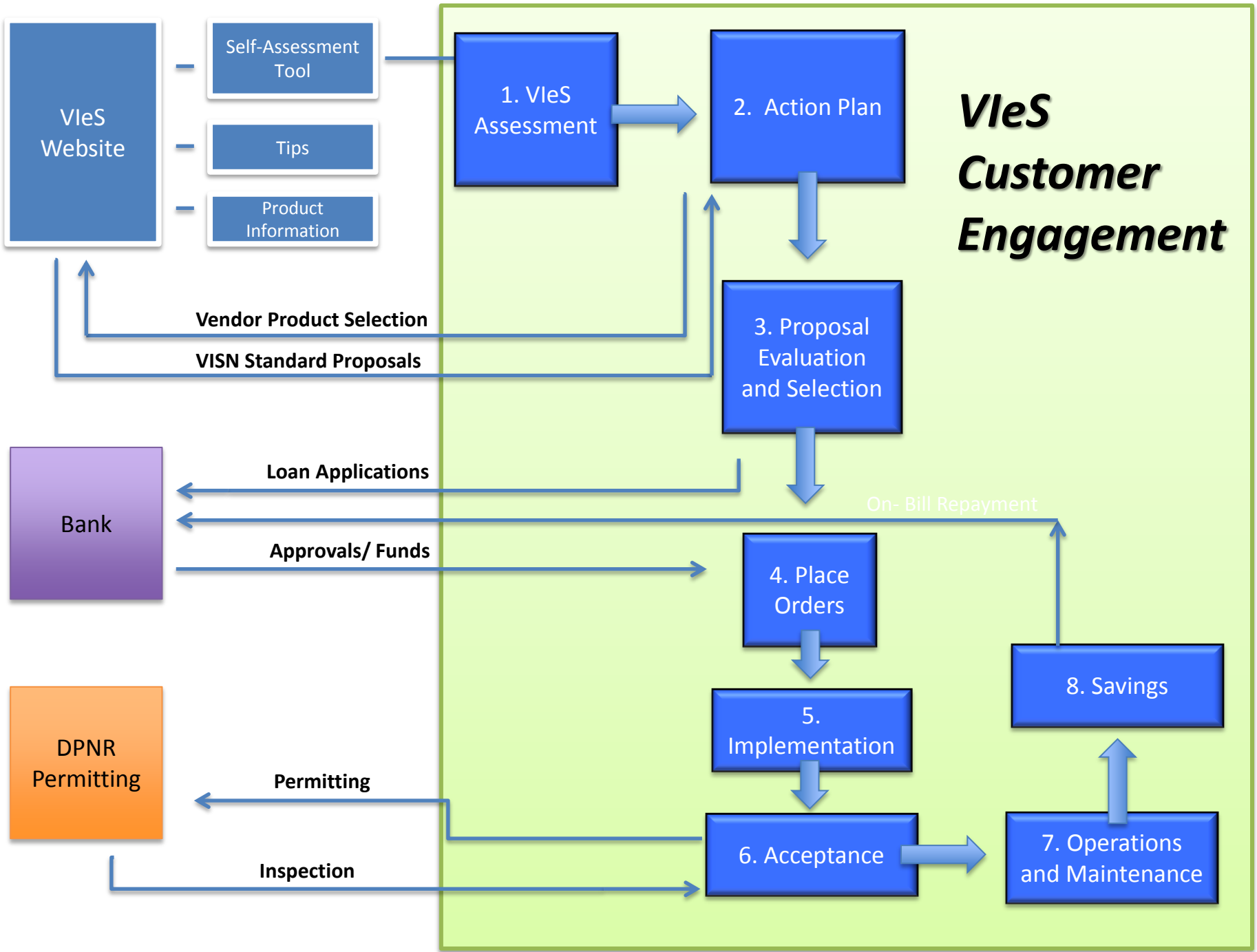
# VleS Product Line



Ethical vendors with proven qualifications to work in the territory

# Organization Structure







# Finding Energy Savings

- VleS offers step by step guides to help customers find opportunities and decide what to do.
- VleS Self Help Energy Assessments
  - A self-assessment creates a starting point for making changes to energy use habits and recommends simple purchases that will reduce utility bills
  - Option 1 : Home Energy Saver a web tool
  - Option 2 : Building Energy Consumption Survey workbook
- VleS Network Professional Help
  - Assessment results guide the customer to making investments
  - Energy Audit
  - Project Proposals

## Is it a good project?

- Review energy and water savings
- Investment qualification and identification of funding sources



## Who is best to do the work?

- Qualified members of the Vlenergize Services Network
- Identify proper equipment
- Identify proper installation professionals



Vlenergize proven

## Verifying Savings

- VleS technicians validate installation quality



## Making the Project Pay

- VISN contractors provide clear maintenance instructions
- VleS technicians visit to check performance



Vlenergize proven

# The Venergize Services Network

## *TRUST, RELIABILITY, FAIR PRICING, INDEPENDENT ADVICE*

VleS is developing the Venergize Services Network (VISN) of product suppliers, energy services providers, and financiers that offer unrivalled experience and expertise in the USVI:

A centralized and interactive list of product and service providers that have met licensing, background, and professional experience requirements for work in the USVI

Professionals that have signed a Code of Conduct committing to a high standard of customer care and quality

A validated forum where consumers share their personal experiences with VISN product and service providers

More efficient, cost-saving projects


# ENERGY SERVICES MODEL TO BE ADPATED FOR BELIZE

**BEL** *Services*

Changing the way we use and save energy

***HELP TO MANAGE ENERGY BILLS***

# Adapting Venergize to Belize

- Organization of American States is providing support to adapt Venergize through MESTPU to improve energy efficiency development In Belize
- 7 year's of EDIN/Venergize experience can be quickly adapted for Belize, such as:
  - Venergize implementation led by the Virgin Islands Water and Power Authority (WAPA)
    - Utility scale solar and biomass (to benefit all)
    - Advanced metering
  - AND  WAPA's clean energy business that assists customers with projects that reduce utility bills



# The Belize model: BEL

Support agencies

MESTPU



Prime Minister



**PUBLIC UTILITIES  
COMMISSION**

POLICY &  
GUIDANCE



BEL

EXECUTION

**BEL** Services

Distribution

Transmission

BEL Energy Services Network

**CUSTOMERS**

# Proposed New Energy Services

Belize Electric Ltd. Energy Services provides advice, information and Implementation support

BEL ES assists Belizeans to reduce utility bills and save money through:

Energy conservation projects

Assisting customers with choosing the right products and services

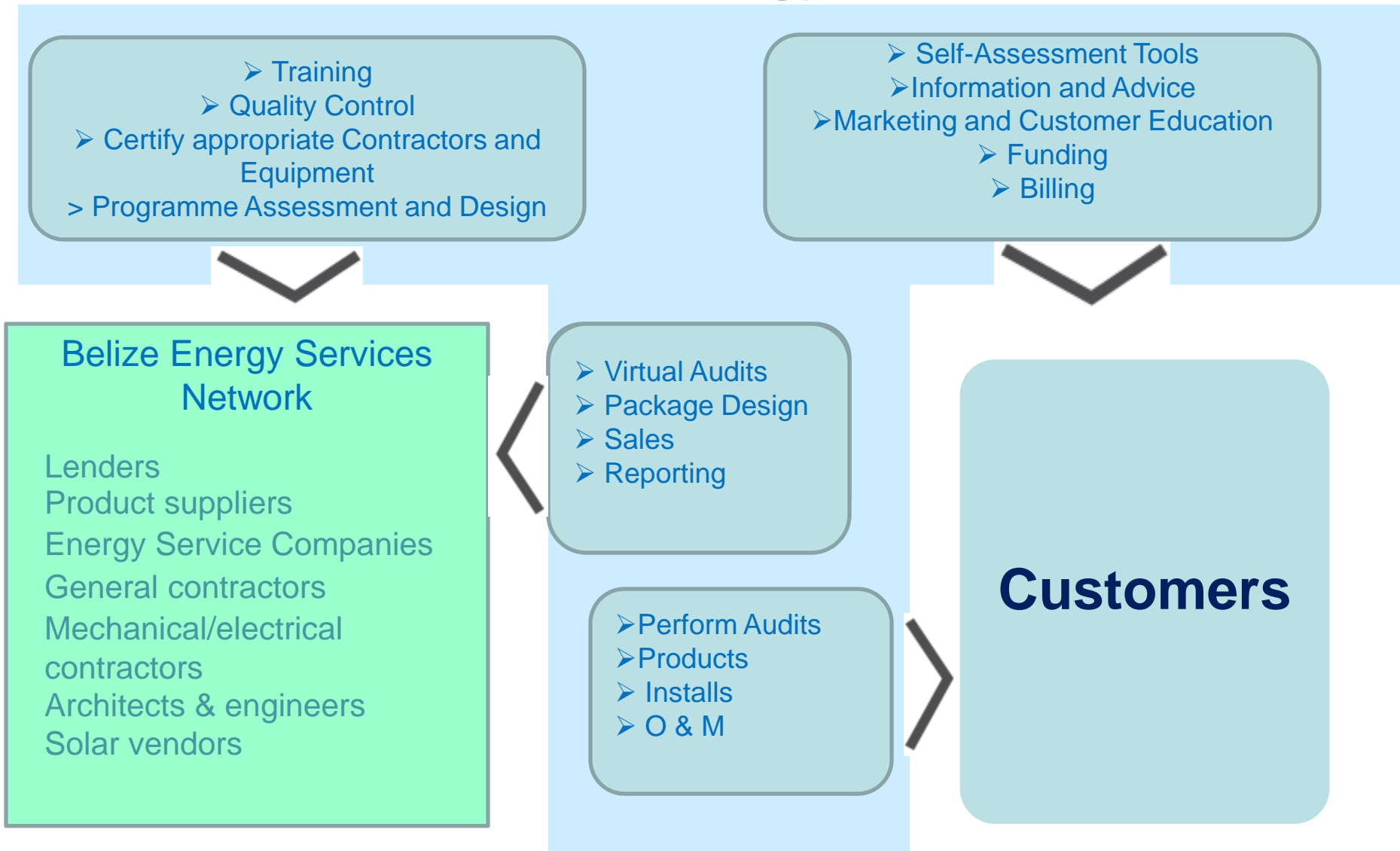
Selecting quality equipment vendors and contractors appropriate for Belize

Finding ways to pay for projects

Verifying fair pricing and quality installations



# Belize Electric Energy Services



# BEL Energy Services - Explained

- Easy, scalable home and business efficiency solutions delivered, that is financed from energy savings
- Key Features:-
  - A default (opt-out) package of basic efficiency offerings that, when financed on a customer's bill, do not increase monthly costs
  - Optional (opt-in) premium packages may or may not lead to bill increases but offer additional value such as improved comfort, distributed RE, fuel switching, data services, etc.
  - An integrated intake and service-delivery experience for customers
  - A platform that allows for new services to be offered over time (and for innovative partners to participate in such offerings)
  - An on-bill financing scheme that eliminates upfront capital injection and apply repayments from savings transparently on bills.
  - Screening vendors and EE products & systems, to select those appropriate for the Belize environment.

# The BEL Energy Services Network

*TAILORED ENERGY AND WATER EFFICIENCY PACKAGES FOR ALL RESIDENTIAL CUSTOMER CLASSES*

Sample BEL ES offerings to meet customers energy needs

Default (opt-out):

- Cool roof
- Ceiling fans
- Lighting
- Water fixtures

Plus (opt-in):

- Default in addition to;
- Refrigerator
- Water heaters
- Clothes washers

Premium (opt-in):

- Plus in addition to:
- Air conditioning
- Energy monitoring
- Renewable energy
  - Windows
  - Insulation

# BEL Cost Recovery

- Rate neutral services
  - No direct impact on rates
- New tariffs allow BEL ES to charges fees to recover costs of providing service
  - Assessments
  - Audits
  - Hourly project support
  - Loan appraisal
  - Equipment rental/leases
  - Billing/loan servicing
- Grant program/concessional loans for low income
  - Program administration cost recovery

# BEL Energy Services In Action: New Construction

- Owner's Agent helps build efficient new buildings
  - Advice on life cycle costs, service providers, equipment selection, and energy intensity (EUI) of buildings
  - Financing support for any increased costs
  - Train installers, inspections, attend handovers by contractors to owners
  - Ensure owners/operators understand what they bought and how to operate systems efficiently
  - Provide service and maintenance reminders to ESN contractors
  - Solar systems may be 'leased' through BEL
- Certifies new construction as "Belize Green"
  - Annual tune ups, retraining and recertification
  - Validation of EUI shown on utility bill

# BEL Energy Services In Action: Belize EcoTourism Green Labels

- Belize stands at the forefront of the eco-tourism.
  - Belize's eco brand include clean energy
- BEL ES enhance the Belize Eco Tourism brand by managing Green Building certification
  - Participation in energy programs will require commitment to Green Building
  - Green Building Logo can be applied to windows, brochures, websites, promotions
  - Green building requires annual recertification
- Government support
  - Extra energy tariff for oil based consumption if not green label?

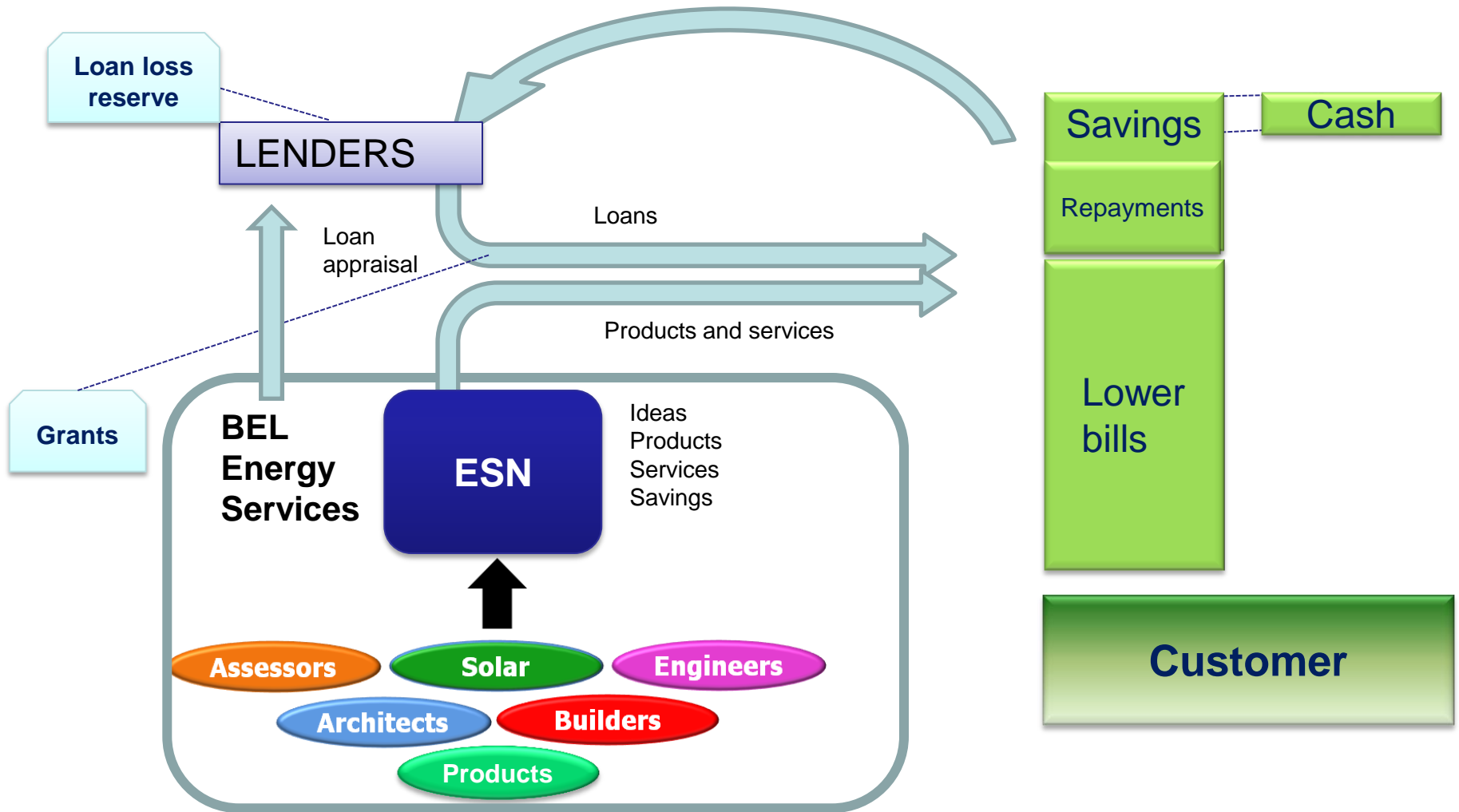
# BEL Energy Services In Action

## Green Tourism

- BEL Tourism Green Key Certification
  - Hotel energy 101 advice
  - Energy assessments and audits
  - Replace inefficient appliances
  - Validate energy intensity (EUI) of buildings
  - Train owners, staff, and maintenance contractors
  - Provide service and maintenance reminders to ESN contractors
  - Any solar systems may be ‘leased’ through BEL
  - On-bill financing for upgrades
- BEL ES certifies properties to use Green Key
  - Annual tune ups, retraining and recertification

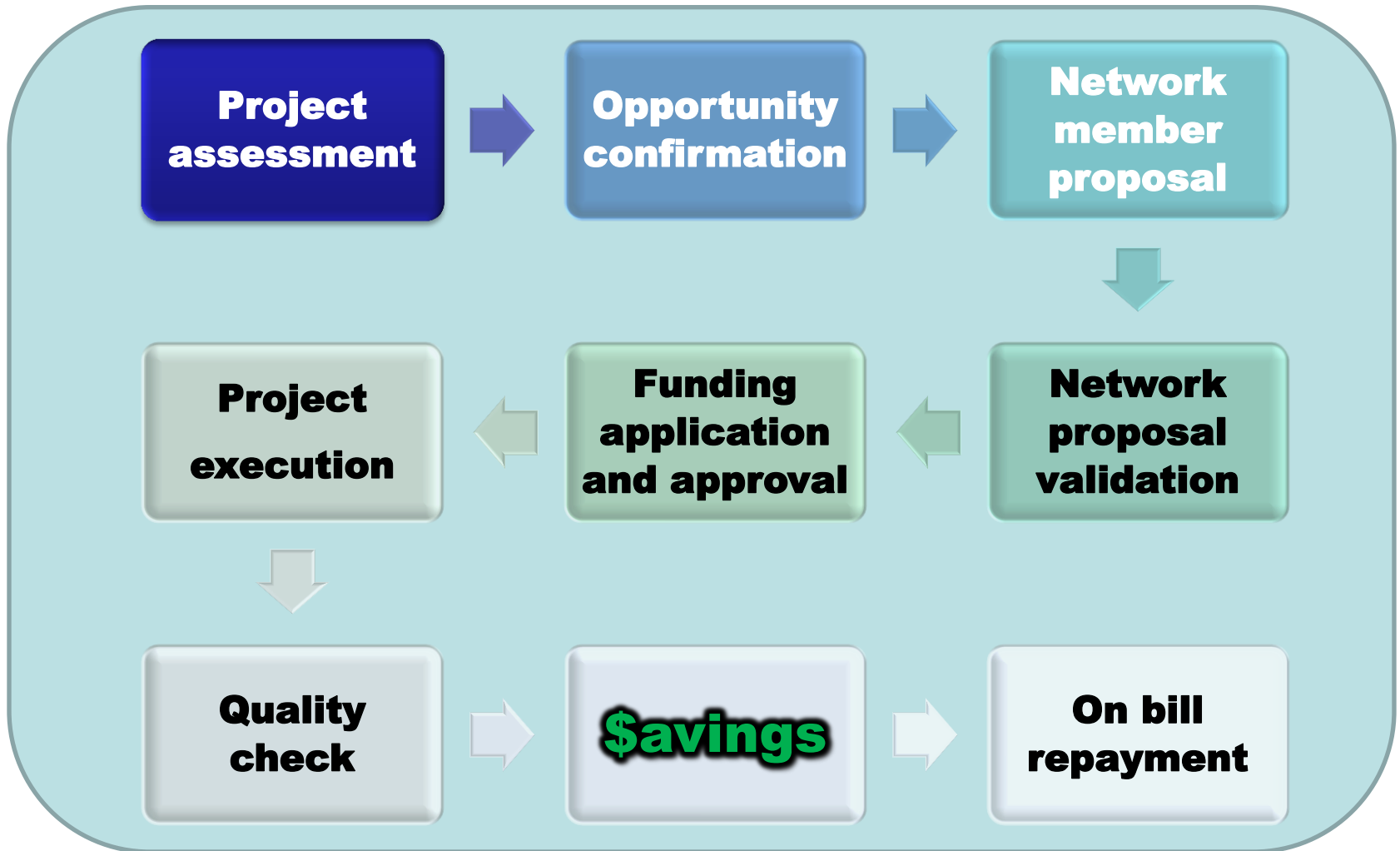


# Example Deal Flow





# Loan Process



# The BEL Energy Services Network

*UTILITIES HAVE CORE ADVANTAGES: ACCESS TO DATA, EXISTING RELATIONSHIP, ABILITY TO PROCURE AND DELIVER AT SCALE*

BEL ES is developing the BEL Energy Services Network of product suppliers, professionals and financiers that offer unrivalled experience and expertise in Belize

A centralized and interactive list of product and service providers that have met licencing, background, and professional experience requirement for work in Belize

Professionals that have signed a code of conduct committing to a high standard of customer care and quality

A validated forum where customers share their personal experiences with BESN product and service providers

Taking a comprehensive approach to customer needs – bundled offerings, financing, central delivery – to achieve high levels of adoption

# BEL ESN Benefits for Members

- Architects/Engineers
  - Attract enhanced fees to design efficient buildings
    - Avoids low fee ‘cookie cutter’ inefficient designs
  - Additional work for retrofits and green certifications
- Contractors
  - Stand out from competition with ESN membership
  - More higher margin work
  - Equip ‘foreman’ to find additional efficiency work
  - Higher wage rate for skilled employees
- Merchants
  - More sales of efficient equipment

# Programme Activities



## Programme Design

- Market research and economics
- Create packages for specific market segments and building types
- Marketing communications/ website design
- Seek input from financial institutions
- Design on-bill repayment structures
- Conduct Community Outreach to get buy-in
- Training

## Institutional Arrangements

- Work with PUC to enable on-bill financing
- Secure loan providers
- Develop Services Network – recruit, train, and certify qualified vendors and equipment
- Coordination with other government agencies
- Launch Marketing & Communication campaign
- Draft Sale and Customer experience guide for customer reps , thereafter recruit staff and train.

## Reporting, Quality Control (QC) and Measurement & Verification (M&V)

- Sales Reporting
- Installation Reporting
- Inspection & Audits
- Coordination with code officials
- After installation handover to customer
- Field Measurements & Analysis
- Evaluate savings performance
- Recommend modifications to the programme

# Key Takeaways for BEL

- Deferred cost maintenance
- Alternative revenue streams
- Assure profitability for BEL while saving customers money
- Pioneering effort in the region
- Raising the level of human capacity within the energy sector

# Proposed Next Steps

- Immediate
  - PUC: Approval for BEL to add a service business
  - BEL: appoint a leader, create a task force
  - MESTPU: Adapt NSES
  - MESTPU: Request additional international support
- 3 months
  - OAS/MESPTU: complete current consultation
  - OAS: plan for future support
  - OAS/MESTPU: participate in Caribbean Renewable Energy Forum
- 6 months
  - BEL: Adapt Vienergize Services business plan to Belize
  - BEL/PUC: approve tariff regime to recover costs