

Financing Mechanisms for Energy Efficiency

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Brief Introduction to TEG

TEG is an award-winning, locally owned and operated consulting firm based in Des Moines, IA. We've been serving our customers since the late 80s.

Our team consists of Professional Engineers, Certified Energy Managers, BPI Building Auditors, Project Managers and other energy professionals.

Our role as third-party energy expert is to be an advocate for our clients and consumers in general. In addition to serving our customers, we actively advocate for better energy policy, serve on influential boards within the industry, and share our expertise!

SERVICE HIGHLIGHTS

- Benchmarking
- Energy analysis and feasibility studies
- Design assistance & energy code evaluation
- Project management
- Tax Credit compliance and assistance
- Rebate, incentive and financing assistance
- EM&V; diagnostic testing
- and much more!



ROADMAP

- Preparing for Energy Investment
 - Analysis
 - Making a Business Case
- Financing Vehicles
- Resources



PREPARING FOR INVESTMENT

Energy Analysis



START WITH COMPREHENSIVE ENERGY ANALYSIS

- Internal or 3rd party
 - Emerging technologies
 - Financing resources
 - Save time, money
- Independent, unbiased
- Qualified energy professional

Yes, even if you have a singular project in mind...

Professional Energy Auditors for Non-Residential

Professional Engineer – PE

Certified Energy Manager – C.E.M.

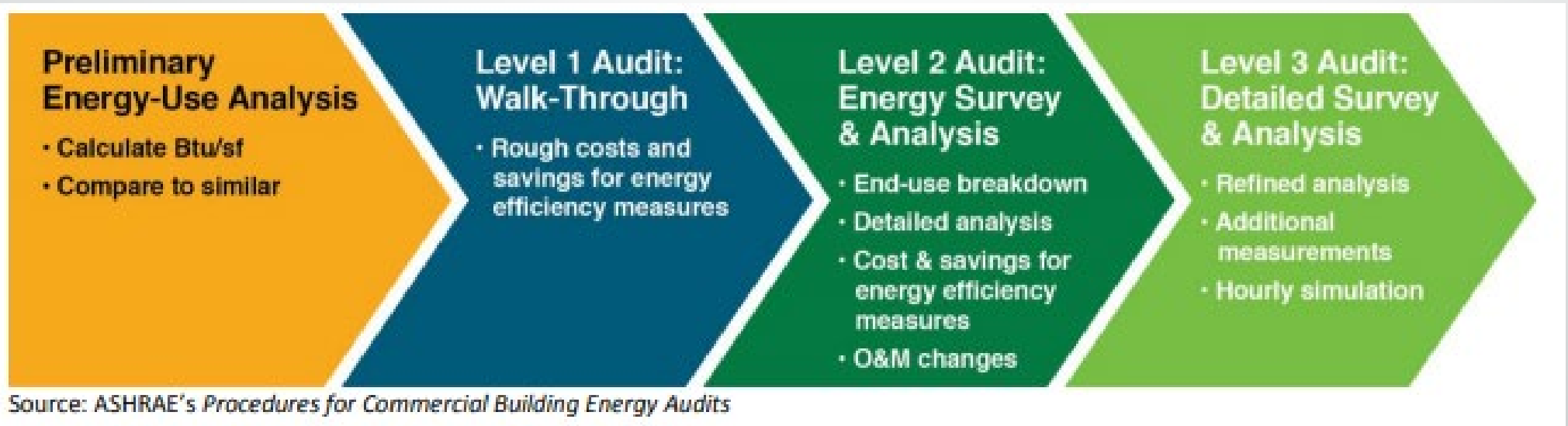
BPI – BA

Registered Architect

Specialized Certifications



ALL AUDITS NOT EQUAL



AUDIT RESULTS INTEGRAL FOR PLANNING

- Garbage in, garbage out
- The better the analysis up front, the smoother the planning, design
- Easier to secure 3rd party financing and qualify for programs

Components of Comprehensive Energy Analysis



Source: ASHRAE Advanced Energy Guides





CASE FOR COMPREHENSIVE ANALYSIS AT ONSET

- Establishes a baseline for measurement and verification
 - Enables team to ensure you are achieving expected savings; intervene if not
 - Measure ROI
- Identifies low and no-cost options that can pave way for larger investments
- Will reveal most cost-effective options

*NOTE:
Especially
important
before investing
in renewable
energy systems!*



CASE FOR COMPREHENSIVE ANALYSIS AT ONSET

- Factors utility rate structure
- Find non-energy benefits that impact bottom line
 - Difficult to quantify, but important to include!
 - LED lighting upgrades gave grocers 19% boost in sales!

Energy Professionals can assess your rate and advocate for options you may be eligible for!



I Digress... here's some resources

- TEG and other energy professionals
- Small Business Administration's Green Business Guide (worth a Google) & sustainable business practices
- ASHRAE Advanced Energy Design Guides www.ashrae.org/freeaedg
- Department of Energy, Energy Efficiency and Renewable Energy pages
- Utility providers



PREPARING FOR INVESTMENT

Making a Business Case



BUSINESS CASE STEPS

1. Calculate cash flows
2. Identify (and plan for mitigating) risks
3. Research financial incentives and opportunities
4. Consider Internal budget



CASH FLOWS ASSOCIATED WITH ENERGY PROJECTS

Positive

- Utility savings, including water
- O&M savings
- Equipment salvage value (if applicable)
- Financial incentives, rebates (more in a bit)

Negative

- Purchase and installation costs
- Disposal cost (if applicable)
- *Cost of analysis, planning, design team
- M&V costs
- Replacement cost, end of life

**Many programs cover costs of these professional services – because they're so crucial to success!*



CONSIDER RISKS AND ENGAGE EVERYONE

Risk Factors Can Include:

- Rate increases
- Operator error
- Occupants “abusing” systems
- Improper installation
- Natural equipment degradation
- System failure

- Who operates your building systems?
- Who uses your building(s)?
- What oversight and measurement is already in place?



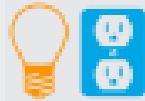
Low Cost Methods for Managing Uncertainty in Energy Savings



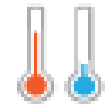
If your building has centralized building controls, use them to automatically adjust operating parameters (lighting levels, thermostat settings, ventilation rates) to achieve the intended building performance. Otherwise, use decentralized controls such as vacancy sensors for lighting, programmable thermostats for heating and cooling, and smart power strips for plug loads.



Establish corporate policies to encourage and manage energy efficient building operation.



Make sure lights and plug loads are turned off at night, and throughout the day when not needed.



Apply upper and lower limits on heating and cooling temperature setpoints.



Regularly check and confirm that other aspects of the building are being operated as intended (window opening/closing, blinds to control solar gains, computer energy management settings) and look for possible operational improvements.



For building owners with tenants, use leasing language to shift relevant components of performance risk to tenants who are in control of building operations and occupancy levels, and consider green leases.



Consolidate occupants to the extent possible, to reduce the need to condition and power underutilized office space.



Recommission the building regularly (balance air distribution, verify sensor operation, tune up boilers) to ensure the building equipment is operating at its maximum efficiency.



TIPS FOR RESEARCHING FINANCIAL INCENTIVES

- *Always* check with your utility provider (some examples in a bit)
- NEVER purchase or install equipment before receiving written preapproval
- Check minimum equipment requirements, timelines, and fine print!
 - Don't be disqualified for a technicality!
 - Understand performance requirements and maximize your rebate

Look for rebates that buy down purchase costs, cover professional services, grants, tax incentives, below market loans, and other incentives to leverage!

Check manufacturer, local, state, federal programs, utility.



NEW CONSTRUCTION – Especially important to check with utility provider first! Many new construction programs offer custom rebates for whole building energy efficiency; including professional fees for design and planning.



RESOURCES TO GET STARTED

- DSIREUSA.org – Database of State Incentives for Renewables and Energy Efficiency
- ACEEE Financing website: aceee.org/topic/financing
- Small Business Administration (SBA) loan program info and design assistance
- USDA – Rural and Ag businesses
- Companies like TEG!



CONSIDER INTERNAL BUDGET

- Internal funding is the simplest, most direct option for owners (without a split incentive)
- Allows owners to capture full financial benefits since they avoid paying a financing provider
- If you don't have capital budget, consider future operating budget dollars
- Multiple avenues to take...
 - OPEX or CAPEX
 - Self-funded EPC (energy performance contract)
 - Capital Investment Fund
 - Revolving Loan Fund
 - Internal Carbon Pricing



Internal Funding: Operating or Capital Budget

Empower branches or locations to identify improvements and fund with operating budget

OR

Create an expedited approval process for energy investments

PRO:

- Uses existing processes
- No extensive setup or management costs

CON:

- Won't guarantee funding for future projects
- Existing processes could move slowly and need updated



Internal Funding: Self-Funded EPC

Empower branches or locations to identify improvements and fund with operating budget

OR

Create an expedited approval process for energy investments

PRO:

- Uses existing processes
- No extensive setup or management costs
- Avoid interest payments, save time

CON:

- Won't guarantee funding for future projects
- Existing processes could move slowly and need updated



Internal Funding: Capital Investment Fund

Special fund for energy projects. Delivers net profit as cash savings are retained in the operating budget.

May engage operators and managers to bring projects forward.

PRO:

- Engages stakeholders to identify projects
- Signals commitment to energy performance
- Establishes accessible funds that can be tracked

CON:

- Must be replenished (savings not recouped into the fund)
- Difficulty getting buy-in for recurring capital



Internal Funding: Revolving Loan Fund

Special fund for energy projects that is sustained with cash savings from implemented measures.

Savings persist, allowing the fund to grow or dollars to be allocated elsewhere. Perhaps for cash incentives to departments/applicants?

PRO:

- Replenishes itself with case savings; long-term
- Engages stakeholders to identify projects
- Signals commitment to energy performance
- Establishes accessible funds that can be tracked

CON:

- Fewer savings realized in operating budget
- Difficulty getting buy-in at start capital



Internal Funding: Carbon Price

Internalizes environmental and social cost of footprint by (A) real price to carbon (\$/ton) that groups must pay into a fund. Fund used for energy projects. (B) Price signal (\$/ton) that informs decisions about capital improvements.

PRO:

- Carbon price revenue feeds fund for upgrades
- Creates incentive that drives efficiency
- Hedges against risk of external carbon regulation

CON:

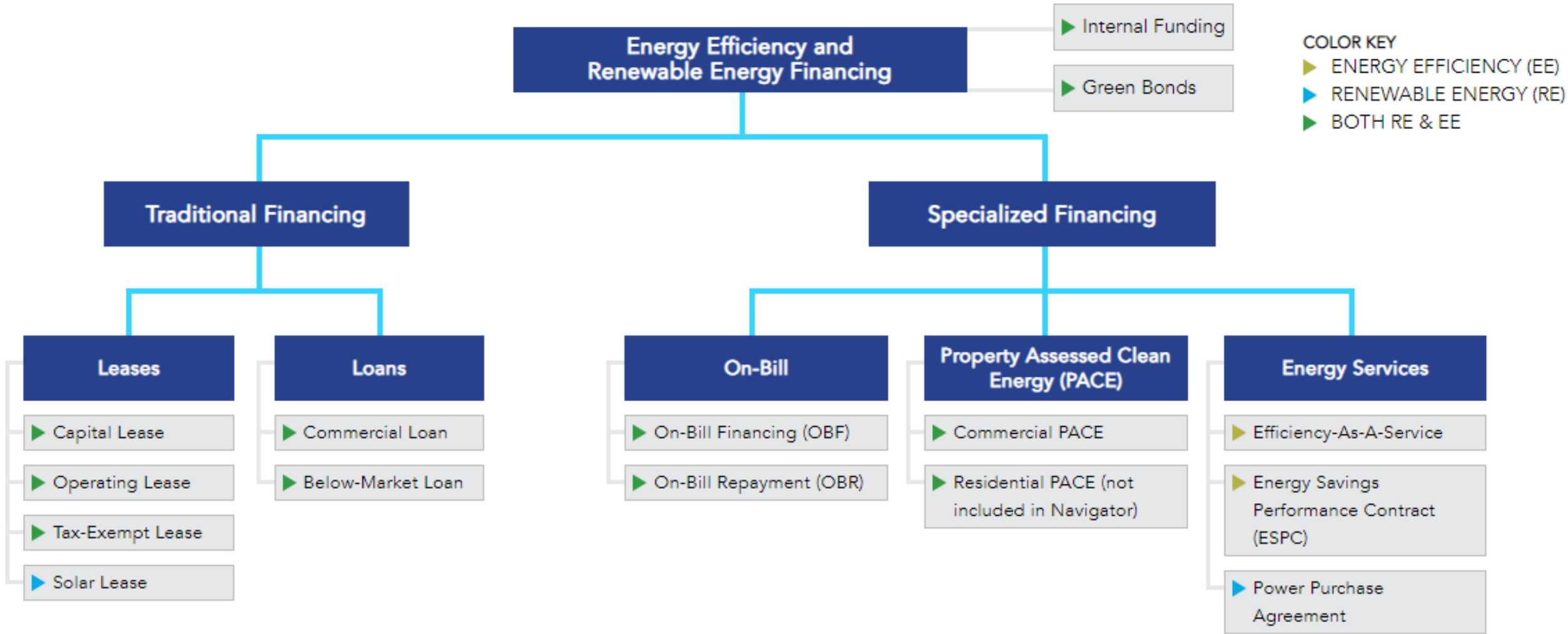
- Internal account and management is complex
- Difficulty getting buy-in at the top
- Newer concept



For a number of reasons, internal funding may not be available or the best fit. But if you have the cash, and you can achieve your goals and meet internal investment requirements, seriously consider it.



FINANCING VEHICLES



Source: Better Buildings Institute Finance Navigator Tool;
<https://betterbuildingsolutioncenter.energy.gov/financing-navigator/explore>



Leases: Capital, Operating, Solar, Tax-Exempt

- Customer arranges financing via contractor, manufacturer, installer or 3rd party lessor
- Lessor pays for installation and equipment
- Customer makes regular, fixed payments according to agreement
- At end, customer can purchase, return, or extend contract

PRO:

- Enterprise-scale financing
- End-of-term flexibility
- Simple structure
- Widely available

CON:

- Creditworthiness
- Some size limitations
- Higher risk – customer takes on risk



Leases: Capital, Operating, Solar, Tax-Exempt

1. Capital – customer owns equipment and lease payment a liability. **Little up front costs, less paperwork, quick approval**
2. Operating – Lesser owns equipment, customer rents. Rent is tax-deductible and operating expense. **Must pass several FASB tests**
3. Tax-exempt – public sector only. **Entity can pay with annual budget.**
4. Solar – Like operating lease; lessor owns equipment, customer rents. **Alternative to PPA when jurisdiction doesn't allow! (Also simpler than PPA)**



Loans: Market & Below Market

- Terms vary by lender, creditworthiness
- EPC, PACE and on-bill structures typically backed by loans
- Customer owns equipment
- Below market offers lower interest and higher tolerance for poor creditworthiness

PRO:

- Widely available and quick
- Simple structure
- Repayment flexibility
- Enterprise-scale financing

CON:

- 20%-25% down payment
- Creditworthiness
- No specialized benefit
- Customer bears risk
- Debt limitations



Below Market Solutions

- State and Local Loan Programs: Department of Energy Revolving Loan Fund
- SBA Small Business Loan Programs
- USDA Programs
- Grants
- Community Development Financial Institutions

FIND OPPORTUNITIES IN YOUR AREA AT DSIREUSA.ORG



On-Bill Financing and Repayment Programs

Typical On-Bill Financing or Repayment Structure



Source: Better Buildings Institute Finance Navigator Tool



On-Bill Programs

PRO:

- Great for leased spaces (if payments and benefits can pass through to end user)
- Transferability (if structured as a tariff, can pass benefits and payments to new tenant)
- Low to zero-interest loans; terms range 2-15 years

CON:

- Limited to service areas where utilities provide and by criteria decided by utility provider
 - Difficult to implement portfolio-wide initiatives
- Most projects limited to \$350K
- Non-repayment could lead to disconnection



ESCOs – Performance Contracts

We covered internally-funded ESCOs earlier and this functions the same way, but with external funding. Customer hires a contractor or ESCO to handle project turnkey, guarantee savings, and manage equipment.

Well-established model, might not be allowed depending on sector or jurisdiction.

PRO:

- Savings guaranteed, risk reduced
- Project management outsourced
- Rigorous market, well-established
- Portfolio-wide

CON:

- High transaction cost, long negotiation period
- Challenging in leases spaces
- Large projects (\$1M - \$5M +)
- High costs paid to lender, ESCO



ESAs – Energy Service Agreements



Source: Better Buildings Institute Finance Navigator Tool



MESAs – *Managed* Energy Service Agreements



Source: Better Buildings Institute Finance Navigator Tool



MESA/ESAs

PRO:

- Savings pay for project, literally
- Off-balance sheet, low risk
- Increased operational reliability – ESA monitors savings and incentive to ensure given terms
- Flexible enterprise-scale
- Great for Multifamily, multiple properties and branches

CON:

- Project size \$1M +
- Contract term must not exceed lease term (limits project scope)
- Without audit or with complicated retrofits, closing can take 9-12 months



Commercial PACE

- Active in 35 states - \$800M in projects funded to-date
- Most of Iowa's neighbors have active PACE programs!
- Enacted at state level, with voluntary uptake/administration by local jurisdictions
- Project is paid over time via voluntary property assessment
- Debt of property transfers if buyer agrees

PRO:

- Secure financing, longer terms
- Rarely requires upfront payment
- Low interest rates
- Private-public partnership

CON:

- Owners only
- Cannot finance portable equipment (lighting)
- Requires legislative action
- Resistance by mortgage lenders and many utilities

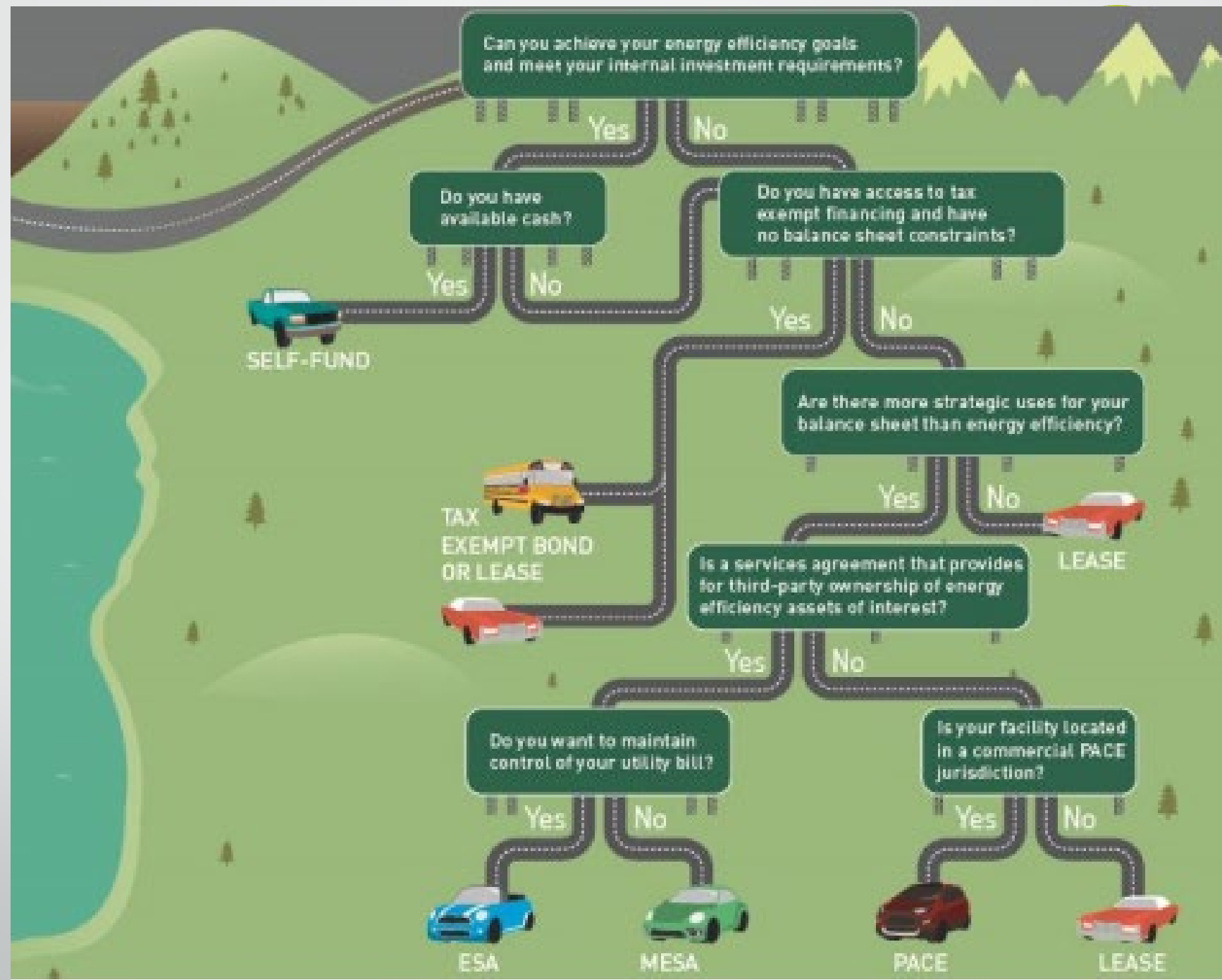


Power Purchase Agreements – Renewable Only

- In July, Iowa's Supreme Court upheld lower court decision to allow PPAs for PV systems.
- Highly complicated contracts; risk overpayment due to increased rate over life of agreement
- Many benefits:
 - Can cover 100% project cost, electric costs reduced
 - Off-balance sheet
 - Predictable energy pricing
 - Can sell excess power (net metering) though terms rely on utility provider

How do you choose?

Source :Third-Party Energy Efficiency Finance: Which Financing Vehicle Gets You On the Road to Efficiency? ACEEE EE Finance Forum, Chicago 2013; "Overview of EE Financing Vehicles" by Bob Hinkle , Metrus Energy





LOCAL OPTIONS & HIGHLIGHTS



Local Loan Funds

- [The Iowa Area Development Group Energy Bank](#)
- [Bright Energy Solutions](#)
- [Cornbelt Power Cooperative Loan Fund](#)



Utility Rebate Programs

- Ames Electric Department
- Cedar Falls Utilities
- Liberty Utilities
- Corn Belt Power Cooperative
- Muscatine Power and Water
- Indianola Municipal Utilities
- MidAmerican Energy
- Interstate Power and Light (Alliant Energy)



State and Federal Tax Incentives

- Sales Tax Exemption for Energy Used in Processing
 - Requirements, eligibility, and exemptions vary by state
 - Iowa provides exemption for % of fuel used in processing on water, electricity, and fuel
- Renewable Energy Equipment Exemption
 - Administered by Iowa Department of Revenue
 - 100% sales tax for Solar Water Heat, Solar Space Heat, Solar Thermal Electric, Solar Thermal Process Heat, Solar Photovoltaics, Wind (All), Hydroelectric, Solar Pool Heating, Wind (Small), Hydroelectric (Small)
 - Solar PV, Wind, Geothermal heat pumps, municipal solid waste, CHP, etc.
- Property Tax Exemption for Renewable Systems
 - Iowa Department of Revenue
 - Solar & wind: 100% exemption for 5 years
 - Geothermal: 100% exemption for 10 years
- Energy Replacement Generation Tax Credit
 - Administered by Iowa Department of Revenue
 - 100% exemption for self-generators, landfill gas, and wind
- Business Energy Investment Tax Credit – US IRS
 - Technologies include:
 - Solar applications for water, space, and process heat



IEDA Alternate Energy Revolving Loan Program iowagrants.gov

- Eligible borrowers
 - Individuals whose primary residence is in Iowa
 - Businesses registered and domiciled in Iowa
 - Water and wastewater utilities, rural water districts and sanitary districts
- Loan Amounts
 - \$25,000 and up to 50% of eligible project costs
 - \$1 million per project/borrower cap

NOTE: Latest round due Oct 1, 2020. Might be renewing for 2021 – check website



References (and Resources)

Better Buildings Finance Navigator

National Renewable Energy Laboratory

Department of Energy

ENERGY STAR

ASHRAE Advanced Design Guides

Metrus Energy, ACEEE "EE Finance Infographic



Thank you!

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The **energy**group 
save energy, save money.