

# FINANCING *CHP Projects*

**Ross Tomlin**

U.S. DOE Gulf Coast Clean Energy Application Center

**Lester Krone**

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# About Us

Develop regional strategies to support **CHP**, **WHR**, and **DE** in **Texas**, **Louisiana**, and **Oklahoma**

## 1) Education and Outreach

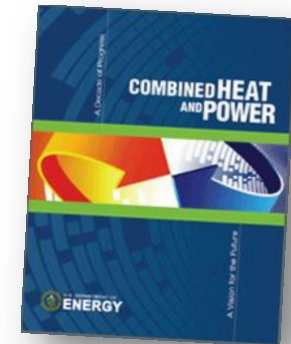
Website, workshops, webinars

## 2) Policy Development Initiatives

Legislative and regulatory issues

## 3) Project Specific Support

Audits, feasibility studies, assistance



DOE: 240 GW of CHP by 2030

# Housekeeping

## **Presentation**

E-mailed to all attendees within 24 hours  
Posted to [www.GulfCoastCleanEnergy.org](http://www.GulfCoastCleanEnergy.org)

## **Questions**

Submit via chat feature  
Answered offline, emailed and posted

## **Continuing Education Units (CEU)**

Available upon request

# Agenda

## I. Federal and State Policies & Incentives

*Ross Tomlin, GC RAC*

## II. Financing CHP Projects with Tax-Exempt and Taxable Bonds

*Lester Krone, Stern Brothers & Co.*

## Q&A

Submit questions via chat feature, answered offline  
Presentation to be disseminated and posted

# Project Risk

## Project Input Risks

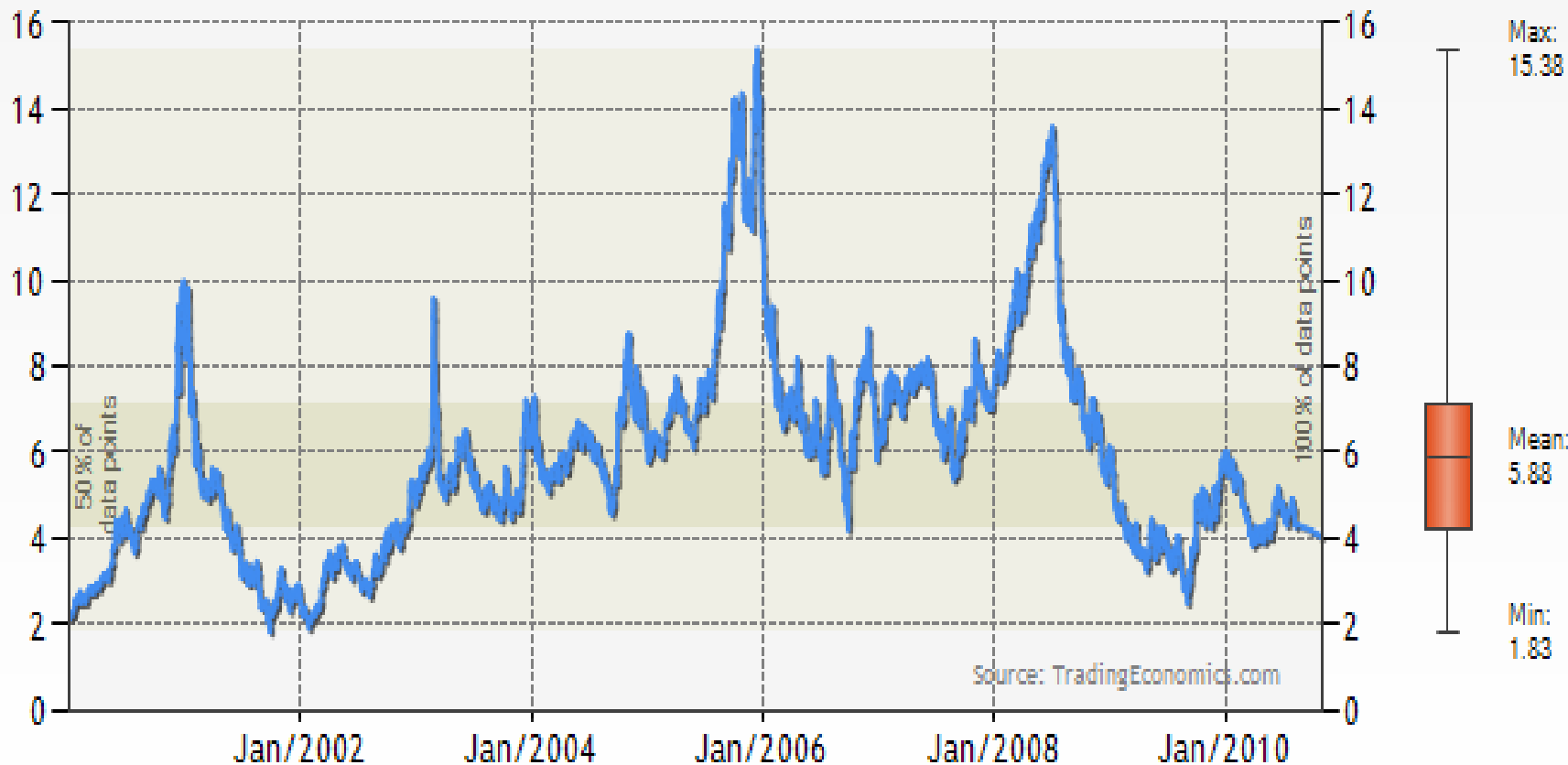
- Fuel Prices
- Commodity Prices
- Construction Prices
- Tax Breaks and Incentives
- Cost of Money

## Project Output Commodity

- Electricity
- Steam
- Chilled Water
- Renewable Energy Credits

# Fuel Risk

NATURAL GAS



# Federal and State Policies & Incentives

Ross Tomlin

Gulf Coast Clean Energy Application Center

# Federal

## Accelerated Depreciation

- **Characterized**
  - Allows greater tax deductions of equipment in earlier years of life cycle (vs. straight-line depreciation) as part of company's net worth
  - CHP does not fall into specific tax category; periods range 5-39 yrs.
- **Rate increase ARRA-funded**
  - 100% bonus depreciation for investments placed between 9/30/10 - 12/31/11
  - 50% bonus depreciation (1/1/12 – 12/31/12)

# Federal

## Investment Tax Credit

- **Application**

- Applies to: CHP, solar technologies, fuel cells & microturbines, geothermal,
- 10% tax credit for CHP property, applicable to first 15 MW
- Can also be applied to alternative minimum tax
- May be coupled with state ITCs (applies only for states w/ income tax)
- Grant-in-lieu ARRA funds available for non-profits (i.e., non-tax paying entities) – must be placed in service or started construction in 2009-2011 (some exceptions for different technologies) – U.S. Treasury

# Federal

## Investment Tax Credit *(continued)*

- **CHP Eligibility**

- Systems < 50MW
- > 60% efficient; provide > 20% electric load, > 20% thermal load
- > 90% biomass CHP ineligible
- Bottoming-cycle applications ineligible (not considered “combined” heat and power yet)
- Cannot be applied before coming online
  - Must be placed into service 10/4/08 – 12/31/14

# Gulf Coast

## Texas

- **LoanSTAR** (State Energy Conservation Office)
  - Low interest, revolving loan program for public facilities
  - CHP qualifies
- **Energy Efficiency Incentive Program**
  - Overseen by PUCT, administered through utilities' SOP programs
  - Texas Methodist Hospital (Houston) – first CHP adopter to receive funds
- **RPS**
  - Biomass CHP qualifies

# Gulf Coast

## Louisiana

- **Pilot RPS**
  - WHR, biomass CHP qualify (other forms of CHP ineligible)
  - Entergy, others currently evaluating bids
  - Expires 2012
- **EE program for utilities (Docket 33107)**

## Oklahoma

- **Renewable Energy Standard (voluntary)**
  - WHR, CHP qualify

# Other states

## State CHP Incentive Programs

- **Arizona:** Southwest Gas (SWG) Corporation's Combined Heat and Power Program)
  - New CHP systems can now get capital cost grants of **\$400-500/kW** (depending on efficiency) from the gas utility's demand-side management program, plus an additional \$300/kW from stimulus funds (available through mid-2012), for a total of **\$700-800/kW**
- **Connecticut:** Onsite Renewable Distributed Generation Program
  - The level of support for individual awards will vary based on the specific economics of the installation and the technology used, up to a maximum funding cap that varies from \$3.20 to \$5.00 per Watt (**\$3200-\$5000/kW**). No single project will receive more than \$4 million in incentives.

# Other states

## State CHP Incentive Programs (continued)

- **Massachusetts:** Alternative Energy Portfolio Standard and Renewable Portfolio Standard; Mass SAVE program
  - Biomass CHP qualifies for \$13-14/MWh under the RPS (currently suspended, pending review of biomass). Fossil fuel CHP qualifies for an incentive of **\$20/MWh** – up to **\$750/kW** – under the Mass SAVE program (active).
- **Other state programs** (no preset \$/kWh incentives)
  - AK, AZ, CA, NJ, ID, MI, MS, NH, NC, NY, OH, UT (most current, some expired)
  - Multiple CHP-eligible programs in some states (MA, NY, OH, PN)

# Other opportunities

- **CHP-eligible state tax credits** (MI, MT, NC, OR, SC)
  - Can be coupled w/ federal ITC
- **Feed-in Tariffs** (CA)
- **Clean Energy Standard Offer Programs** (utility-administered)
- **Energy grants/funds**
- **Green building/property tax abatements & exemptions**
  - State, municipal levels
- **RPS/EERS** (CHP eligibility varies, some states provide funds)
- **Low-interest loan programs**
- **Third Party Ownership**
  - City of Dallas Southside Wastewater Utility (w/ Amaresco) – Dallas, TX
  - Dell Children’s Hospital (w/ Austin Energy) – Austin, TX

# Resources

- Database of State Incentives for Renewables and Efficiency (DSIRE) ([www.dsireusa.org](http://www.dsireusa.org))
- American Council for an Energy-Efficient Economy ([www.aceee.org](http://www.aceee.org))
- EPA CHP funding database ([www.epa.gov/chp/funding/funding.html](http://www.epa.gov/chp/funding/funding.html))
- EnergyTaxIncentives.org
- Internal Revenue Service
- U.S. Treasury



# **FINANCING CHP PROJECTS WITH TAX-EXEMPT AND TAXABLE BONDS**

**U.S. Department of Energy  
Gulf Coast Clean Energy Application Center  
Financing CHP Projects Webinar  
March 30, 2011**

**Lester H. Krone  
Managing Director  
Stern Brothers & Co.  
St. Louis, MO**

# I. Introduction – Bond Financing of Renewables in General

- Stern Brothers has pioneered the use of tax-exempt and taxable bonds to finance private developers' renewable energy projects in a variety of segments, e.g., cogen/CHP, biomass, second generation biofuels, WTE, LFG, and we are expanding the practice to include second generation biofuels, wind, solar, hydro, etc.
- Illiquidity of bank syndication market and disappearance of tax equity market have made tax-exempt and taxable bonds an exciting and independent source of debt capital for renewable project financing. Can be used as sole source of debt or as complement to bank debt.
- Types include traditional solid waste bonds and QECBs, new tax credit bonds.
- In current market, bonds are a realistic alternative to bank debt, and offer structural advantages that improve equity returns.

# Using Bonds for Renewables – Trends and Challenges

- **Balance sheet ownership by governments and utilities: is this the best approach? Accounting/rating, cost of energy and project risk considerations.**
- **Use of PPP's as non-recourse, off-balance sheet ownership and financing structures by municipalities, universities, school districts, hospitals, muni utilities.**
- **Is PPP debt off-balance sheet under new FASB rules? Is it “off-credit” for rating purposes?**
- **How debt of PPP can be structured and placed using bonds: for-profit and non-profit/governmental models.**
- **How do you finance renewable projects in the PPP context in today's tough financial markets.**
- **The key to creating credit quality in PPP debt: shifting project finance risk, and using credit enhancement if available and cost-effective.**

# Credit Enhancing Bonds for Renewables - Trends

- DOE 1703, 1705
- USDA 9003, B&I
- State moral obligation guarantees – Oregon
- State feed in tariffs – Vermont, California
- Letters of credit; parental guarantees
- Export-import bank guarantees – Denmark for AD projects
- Wind Project – Prepays of PPA's – Cowlitz County, WA
- Utility/Refiner guarantees or tolls – Bionol, PA
- Bond insurance
- BB or higher stand alone ratings

## **II. Financing Renewables for Private Developers Using Bonds**

- Tax Code has long provided for use of tax-exempt bonds by private sector developers, as well as governmental entities.**
- Traditional examples of private activity bonds include industrial revenue bonds (IRBs) and solid waste disposal revenue bonds which can be used in various segments within the renewable energy space, such as solar, WTE, biomass, cogeneration, biofuels, LFG, coal gasification.**
- New tax-exempt or tax credit bonds created prior to and as part of ARRA: CREBS, Katrina Zone, Midwest Disaster Relief, QECBs. Potential expansion of solid waste bonds. Potential use of tax-exempts even if backed by federal guarantee. Flexibility to use exempts along with 1603 Grants, PTC/ITC, NMTCs, Manufacturing Tax Credits.**
- Potential Renewal of Build America Bonds (BABs) and Recovery Zone Bonds.**

# Characteristics of Tax-Exempt or Taxable Bonds

- Finance capital expenditures using leverage ratios similar to bank debt. Typically issued to institutions like mutual funds, insurance companies, corporations.
- Bonds represent a combination of construction and permanent financing. All proceeds drawn at closing.
- Interest rate is fixed. Historically tax-exempt bond pricing is 2% lower than taxable debt for comparable term.
- Potential for long tenor of 15-20 years or more, depending on PPA term. Flexible amortization and call feature. Construction interest and DSRF handled like bank debt.
- Buyers want to hold to maturity and have different investment objective than banks.

# History of Bonds and Renewables

- Before “renewables”, bonds were used for small WTE, LFGTE and wood waste projects. Recently bonds used to finance corn ethanol plants, when IRS issued PLR in 2002 recognizing “stillage” as waste. Result was 40% of plant could be financed with bonds. Taxable bonds were used for other segments, e.g. solar, biodiesel, biomass, CHP. Stern also placed one of the first tax-exempt waste bonds to finance landfill gas to electricity projects in 2003.
- Stern Bros. pioneered use of bonds as important part of cap structure, and developed buy side acceptance of ethanol projects from mutual funds buying high yield tax-exempt bonds. Bonds offered key advantages over bank debt: rate, tenor, amortization. Result was higher IRR for developer.
- Last major greenfield ethanol transaction was 2008 for Bionol: Stern’s \$65 million senior bond tranche filled a hole in bank syndicate and was first to use toll with US refiner.

# Advantages of Bonds Over Bank Debt

- Exploring why the bonds offer advantages over bank debt in some cases, beyond fixed rate and rate differential:
- Banks require shorter tenors and cash sweeps which shorten average life of the loan.
- Bond funds want a longer maturity, do not want rapid amortization, are flexible with deferral of principal.
- Bonds can be structured with 15-20 year tenors, depending on term of off-take contracts, and can defer principal until after bank debt swept out.
- Resulting debt structure of project improves the IRR as developer receives return sooner.

# Using Bonds for Renewables

- **Stern interested in using tax-exempt and taxable bonds for various renewable technologies, based on precedent set by similar transactions in the past.**
- **We will apply structuring and bank inter-creditor strategies techniques learned in the solar, biofuels and LFG spaces.**
- **We will offer bonds to institutional buyers which have an appetite for project financings with good credit.**
- **We have spoken to leading bond counsel firms and believe the solid waste rules will apply to a variety of technologies and projects that use “waste” as a feedstock.**
- **Taxable bonds can be used to fill in gaps if some costs or project as whole are not deemed tax-exempt eligible.**

## What Are Terms for Tax-Exempt and Taxable Bonds in Today's Market?

- **Par Amount/Leverage:** depends on project. \$15-200 million for most renewable projects. D/E requirements are credit dependent and similar to banks.
- **Rates:** Depends on credit (e.g., IG PPA). Based on wider credit spreads and less liquidity, “BBB” deals today for 20-year bonds at 5.5-6.5% tax-exempt, 7.5-8.5% taxable, if rating obtained. “BB” credits higher. Coupons for unrated projects are 8-10% tax-exempt, > 12% taxable.
- **Tenor:** Concurrent with PPA or off-take.
- **Amortization:** Flexible. Deferred principal. Sinking fund. Bullet unlikely. Scheduled principal repayment versus cash sweeps or cash trap based on debt service coverage.
- **Call:** Typically 8-10 years at par for 20-yr tax-exempt paper. Can negotiate shorter 5-yr at premium. Taxable: make-whole call.

## **What Are Credit Requirements for Bonds in Today's Market?**

- No technology or scale up risk. Demonstrated results at pilot / demo plant and first commercial plant. IE report essential.**
- Construction risk handled as with bank debt. GMP EPC contract with tech wrap; without wrap, contingent equity.**
- Will take operating risk as project lenders.**
- Generally will not take merchant risk – looking for PPA or off-take/toll from IG rated counterparty. Debt service on bonds to be paid through contracted cash flows.**
- Currently, tax-exempt buyers are mutual funds and corporations; taxable buyers are life companies, pension funds, special situation funds looking for equity features.**

## **New Tax Credit Bonds: CREBs and QECBs**

- Not tax-exempt, not interest bearing (generally). Tax credit rate, term of bonds and amount of allocation set/approved by Treasury. Bonds sometimes sold at discount or with supplemental coupon.**
- Intent is to provide governments and developers with lower cost source of debt capital than even tax-exempts.**
- Tax credit amount (\$) is included in income and also as a credit against ordinary income and that subject to AMT. Rate for credit may be higher than exempt rate to compensate for taxability.**
- CREBs authorized in 2005; all initial allocation gone. New CREBs and QECBs authorized in 2008. No regulations on certain issues yet from Treasury.**

## **Applying Tax Credit Bonds CREBs, QECBs to Renewables**

- Both apply to open and closed loop, LFG and MSW – all to electricity. Problem with NCREBs is only apply to local governments, public power and electric coops. Developer may use if does a “CREB lease” – ownership with government.

- QECBs not limited to “publics” but can be used like private activity bonds. Still issued by government conduits. Same broad application to renewable as NCREBs but “rural” development requirement (USDA analysis). Allocation limited to \$3.2 billion nationally for each, but no more than 30% for private activity. Time period for application is “months”, so developers must plan in advance.

Institutional investors and banks are buying tax credit bonds in direct placements. Credits can now be carried forward, and stripped by bond buyer and monetized, improving their marketability.

## **New Tax-Exempt Bonds: Recovery Zone Bonds Renewed for 2012?**

- **New category of private activity bonds authorized by Stimulus Act; expired at the end of 2010. Talk of reauthorizing in 2012.**
- **Bonds are available in every state and can finance all types of property, without regard to meeting solid waste rules. Similar to Katrina or Go Zone bonds.**
- **Initial volume cap allocations made to the states to counties and other local government units. Allocations in 2009 made based on loss of employment.**
- **Unused allocations sent back to the state and then reallocated to counties with projects needing specific cap amounts.**
- **RZBs can finance developer- owned renewable projects using tax-exempt bonds without the need to meet solid waste or other rules re eligibility of specific equipment.**

### III. Financing Renewables - Case Studies

*Hydroelectric expansion project using Recovery Zone Bonds (RZBs) and Qualified Energy Conservation Bonds (QECBs).*

- Owner of private dam with existing 2.3 MW generation capacity adds additional 4.6 MW of generation.
- PPA with 25-year term from A-rated municipal utility; capacity charge plus energy charge.
- Tax-exempt RZBs; 7.625% coupon.
- Taxable QECBs; interest rate subsidy from U.S. Treasury makes these bonds the cheapest source of capital (8.80% coupon – 3.66% subsidy = 5.14% net coupon).
- Overall cost of capital 6.70%, 13.5 years average life

# Case Studies

***CHP project for university – off-balance sheet but pass through of project risks.***

- **CHP plant owned by private LLC. 1603 grant eligible.**
- **PPA with university where all costs of production and debt service are passed through on take or pay basis.**
- **Key to credit is transfer of operating risk and rating of university.**
- **LLC tax-exempt or taxable bonds rated one notch below university rating.**
- **Rating lower if project retains operating risk.**
- **LLC debt is “on credit” to university.**

# Case Studies

*Biomass to power project for hospital – off-balance sheet but pass through of project risks.*

- Biomass to power project owned by separate non-controlled Not for Profit.
- PPA or lease with hospital where all costs of production and debt service are passed through on take and pay basis.
- Key to credit is failure to transfer operating risk and rating of hospital.
- Not for Profit bonds are tax-exempt and rated as project financing.
- LLC debt is “on credit” to hospital.
- Project not 1603 grant eligible as Not for Profit owner not a taxpayer. Financing done as 100% leverage but more expensive due to absence of grant.

# Case Studies

## *Cellulosic ethanol project.*

- **DOE 1703 loan guarantee for 100% of 80% project debt necessary because technology is not commercialized.**
- **Federal Financing Bank loans 80% of capital cost at Treasuries plus 75 bps for 20 years (concurrent with off-take). Loan is guaranteed by DOE under 1703.**
- **No unguaranteed debt.**
- **20% equity from sponsor.**
- **Developer pays credit subsidy cost. Limited track record of success under this program. Still an option for new and unique technologies.**
- **Application process expensive, time consuming and risky.**
- **Risk of changing RFS approach to advanced biofuels.**

# Case Studies

## *Renewable energy project with NIG rated PPA Using Section 1705 DOE Loan Guarantee.*

- **DOE 1705 loan guarantee for 80% of 80% project debt; need enhancement due to credit of PPA counterparty; and technology is commercialized.**
- **Bank loan or bonds subject to guarantee. Guaranteed bonds are taxable unless rule is changed. Unguaranteed loan or bonds can be stripped and placed with different lender than guaranteed tranche.**
- **Unguaranteed bonds can be tax exempt or tax credit (QECBs) but will be rated as project financing with floor of BB. Cost of rating is \$200,000.**
- **Project is 1603 eligible and loan or note used to bridge grant. Separate tranche priced at reasonable spread to Treasuries reflecting commitment by Treasury to pay grant. Diligence necessary for bridge includes legal opinion and Big Four accounting firm opinion.**

# Case Studies

## *Biomass equipment manufacturing project – supply chain for biomass – using Advanced Manufacturing Tax Credit.*

- **USDA loan guarantee under B&I program for 60% of project, with \$40 million cap. Guarantee can apply to bonds as it is assignable.**
- **Unguaranteed portion of debt must be taken by bank or bondholder who takes guaranteed tranche.**
- **Guaranteed bonds are taxable but still low interest rate; unguaranteed bonds can be tax-exempt but rate may be higher than 10%, depending on overall credit quality.**
- **Qualifies for advanced manufacturing tax credit. How to monetize this credit (it is not a grant)?**

# Case Studies

## *Renewable energy project Using State Moral Obligation Guarantee.*

- **State moral obligation guarantee applies to bonds giving them a rating one notch below the state's general obligation rating; no longer a project financing. Requires BB underlying rating.**
- **Bonds can be tax-exempt as moral ob does not affect tax status of bonds the way federal guarantee does.**
- **State still has to be satisfied of credit quality, may have its own rating floor requirement.**
- **1603 eligible but bondholders want 15-25% equity from sponsor to remain in deal after grant comes in. Developer cannot use grant as substitute or take out of its own equity, must have skin in the game, amount of which depends on credit quality and lender.**

# Case Studies

## *WTE project in Vermont with Feed-in Tariff.*

- **Feed in tariff obligates State PUC to buy electricity at above market levels sufficient to make financing IG.**
- **Feed in tariff is legislative analogue to creditworthy PPA.**
- **Tenor of PPA is longer than many utility PPAs available in other markets.**
- **Bonds can be used and can be tax-exempt.**
- **State still has to be satisfied of credit quality, may have its own rating floor requirement.**
- **1603 eligible.**

# Case Studies

## *Biomass to Power project with prepay of PPA.*

- **Municipal utility issues tax-exempt bonds to prepay part of the PPA. Specific safe harbor for such bonds under IRC.**
- **Bond proceeds are contributed to developer as an additional source of funds, eliminating the need for debt or equity that would otherwise have to be raised in that amount.**
- **1603 eligible because contribution does not give utility an ownership interest in the developer.**
- **Allows developer to use utility's lower cost of capital. Utility locks in cost of renewable power.**
- **Credit enhancement of developer's obligation to deliver power, or right to cure; also enhancement of utility's obligation to pay for power in future, depending on utility's rating.**
- **How to structure bonds non-recourse to utility.**

# Case Studies

## *Anaerobic digestion project developed using technology from Denmark – Export/Import Bank Guarantee.*

- **Private developer can use tax-exempt or tax credit bonds backed by Export/Import Bank Guarantee from Denmark.**
- **Bonds are rated AA up to amount of debt guaranteed and remain tax-exempt.**
- **Unguaranteed portion will be sold as separate bond tranche and will need to be BB credit quality to get a reasonable interest rate.**
- **Amount of bonds subject to guarantee is greater of 70% of loan amount or 110% of amount of non-US content.**
- **Developer must pay fee for use of ex-im guarantee reflecting difference in rate caused by higher rating.**

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# Wrap-up

- **Questions**
  - Submit via chat feature
  - Answered offline, emailed and posted
- **Presentation**
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- **Continuing Education Units (CEU)**
  - Available upon request

# Upcoming webinars

**April 5** – Streamlining Project Development

**April 14** – Texas CHP Initiative Legislative Update

## GC RAC webinars

- Offered weekly
- Free!
- CEUs/PDHs
- Archived
- Suggest a topic

Go to [www.GulfCoastCleanEnergy.org](http://www.GulfCoastCleanEnergy.org) > News & Events > Webinars

# Contact

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