



Performance Contracting at Virginia Department of Corrections



3 Feb 2010





Agenda

VaDoC Performance Contract Experience

- Getting Started – Features of a PC, ESCo, ESPC
- PC History
- Contracting Method
- Getting Financing
- DOC Projects – Phase 1, 2, and 3
- Project Financial Performance
- Verification Process
- Questions and Contacts





Getting Started- Features of a PC Project

- Capital improvements without a capital budget
- Identify and stabilize utility costs
- Low interest fund source
- Support goals of EO 48, EO 59, and EO 82
- Savings guarantee with annual audit
- Need to establish a utility budget





PC In Virginia

- **March 2001: Energy Efficiency Performance Contracting Act**
- **October 2005: Treasury Master Lease for ESPC**
- **April 2007: Executive Order 48 – *15-20% energy reduction by 2010***
- **Dec 2007: Executive Order 59 – *30% emission reductions by 2025***
- **July 2009: Executive Order 82 – *CEM, Recycle, Telecommute***
- **VA projects completed to date exceeds \$250 million**
- **VADOC projects completed to date exceeds \$30 million**





Contracting Method

2 Step Competitive Negotiation

Request for Qualifications

Statement of Qualifications

Back of the Envelope Audit

Contractor Selection

Detailed Audit

PC Scope and Contract

Standard Contract Forms





Contracting Method

DMME will help you.

Mr. Charlie Barksdale

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Getting Financing

- Contractor Financing
- 3rd Party Financing
- Master Lease





Getting Financing

Treasury will help you.

Ms. Leslie English

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First Stop

<http://www.dmme.virginia.gov/DE/StateAgencyProgs/performancecontracting.shtml>





DOC Phase I Project Results

- \$8.2 million project cost
- \$733,707 annual energy and operational savings
- 4,574 KW reduction in annual electric demand
- 44 million gallons of water not used
- BAS maintenance cost included in payback
- Equipment maintenance cost not included in payback
- Additional O&M cost noted in high efficiency equipment
- 15 Year Loan / 15 Year Payback / 15 Year Equipment Life !!?





DOC Phase 2 Project Results

- \$10.2 million project cost
- \$996,806 annual energy and operational savings
- 1500 KW reduction in annual electric demand
- 52 million gallons of not used
- BAS maintenance cost included in payback
- Equipment maintenance cost not included in payback
- Additional O&M cost noted in high efficiency equipment
- 15 Year Loan / 15 Year Payback / 15 Year Equipment Life !!?





DOC Phase 3 Project Results

- \$ 22.2 million project cost
- \$1.9 million annual energy and operational savings
- 2,011 KW reduction in annual electric demand
- 101 million gallons of water not used
- BAS maintenance cost included in payback
- Equipment maintenance cost not included in payback
- Additional O&M cost noted in high efficiency equipment
- 15 Year Loan / 15 Year Payback / 15 Year Equipment Life





Energy Conservation Measures

Short Payback, Significantly Less Than 15 Years

- Lighting Upgrades
- Water System Improvements
- Facility Automation and Control System Installation
- Steam Trap Replacements
- Water Heater Improvements

Longer Payback, More Than 15 Years

- Building Envelope Upgrades
- Mechanical Infrastructure Upgrades





The Formula Applied

Cost Avoided - Infrastructure Upgrade Cost = 0

Phase 3 Greensville Correctional Center

- Located on over 1,100 acres in Jarratt, VA
- Male Inmates, single, and multiple sentences
- Opened - 1990
- Average Daily Population - 3,055
- Death Chamber, Segregation Unit, Infirmary





The Formula

Take Quick Savings



and

Fund Infrastructure Improvements





Reducing Lighting Costs ●

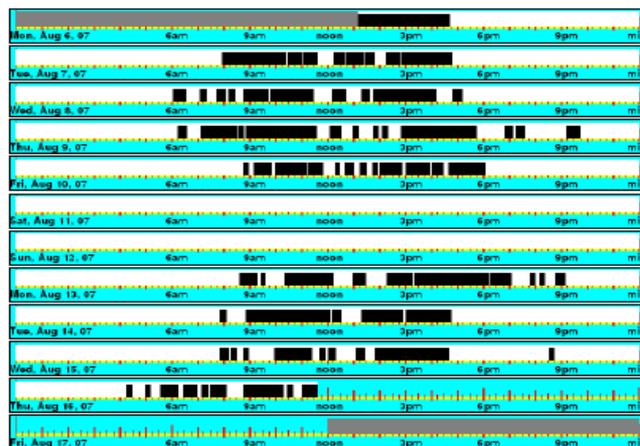
- F32 T8 Lamps and electronic ballast
- LED Exit sign
- Incandescent to compact fluorescent
 - Energy Efficiency
 - Cleaner, brighter rendering of light
 - Reduced lamp & ballast replacement cost
 - Standardization of materials
 - 5 Year Ballast Warranty





Reducing Lighting Costs

- Occupancy sensors
- Sensors set with delay
- Ceiling or wall mounted
- Careful Selection





Reducing Water Use ●

- Low Flow Faucets and Controls
- I-Con or Sloan Flow Control
- Automated shutdown procedure





Reducing Water Use ●

<http://www.i-consystems.com/>

The advertisement features a composite image. On the left, a lush green forest stream flows over mossy rocks. On the right, a close-up of a drain cover is shown with water droplets on its surface. Below the images, the text reads: "Intelligent Plumbing Controls Save Up to 70% on Facility Water/Sewage Bills!"

how much
are you
losing
...down the
drain?

Intelligent Plumbing Controls Save Up to 70% on Facility Water/Sewage Bills!





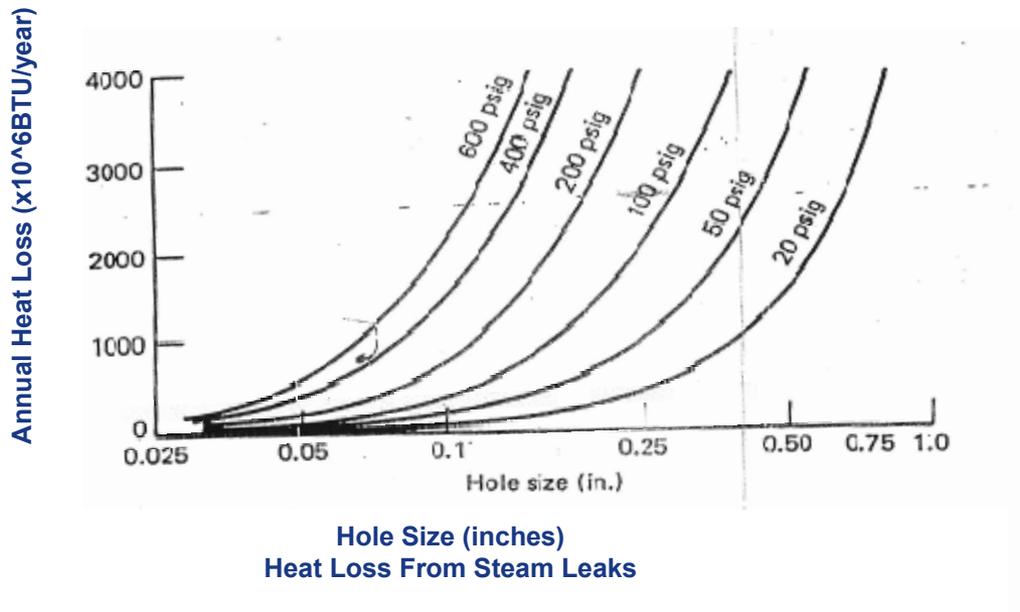
Controlling Building Systems

- Night Setback
- Vary Outdoor Air Ventilation on CO₂
- Control and Log Freezer Temperatures
- Participate in Demand Response
- Combustion Controls





Reducing Steam Losses





Reducing Water Heating Cost ●

- Higher efficiency water heaters
- Instantaneous water heaters
- New steam to domestic water heat exchangers
- Solar thermal





Cost \$128,000
Savings \$150/Day or \$54,750
Simple Payback 2.3 Years
Replaced Failed Equipment
Installed New Equipment 20 Year Life





Cost Avoided ●

- Electricity from Lighting Retrofits
- Water from I-Con Systems Retrofits
- Fuel (Propane, Fuel Oil or Coal) from Steam Trap Replacements
- Electrical Demand from Building Controls





Caulking

Caulk precast expansion joints





Mechanical System Replacement





Mechanical System Replacement

Administration 50 Ton HVAC Unit Replacement

- DDC control system
- Air balance
- Repair/replace (23) VAV boxes





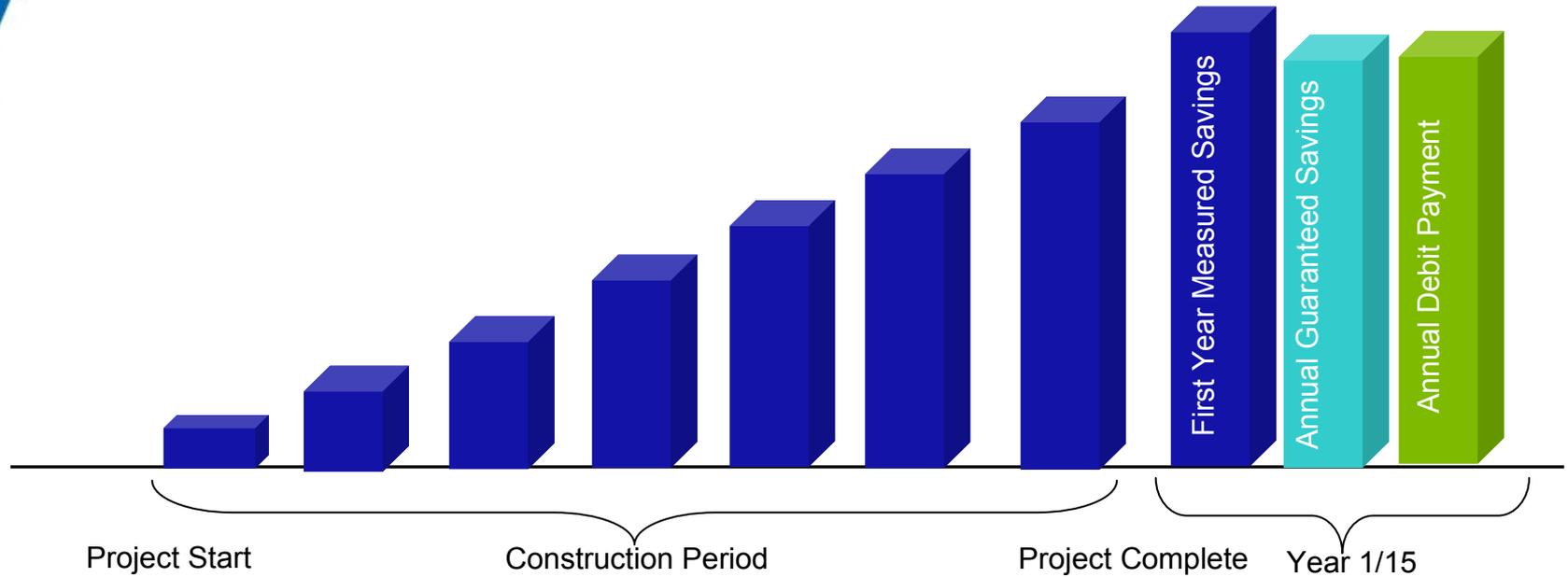
Mechanical System Replacement

- Support Building 1 - 50 ton rooftop unit
- Support Building 2 –50 ton rooftop unit
- Support Building 3- (2) 50 ton, (1) ton rooftop unit
 - DDC control system
 - Outdoor air economizer
 - Variable speed drives
- Air Balance system, (150) VAV Boxes





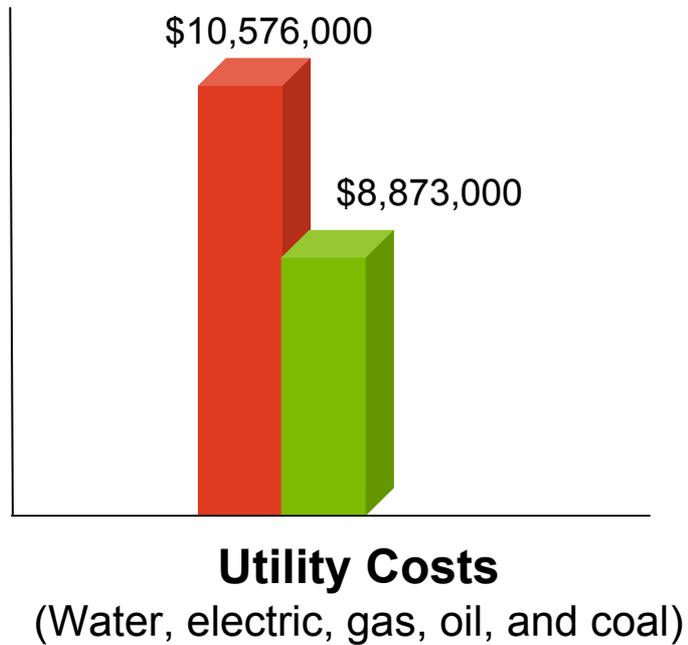
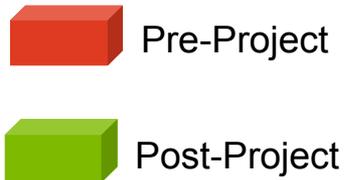
Financials





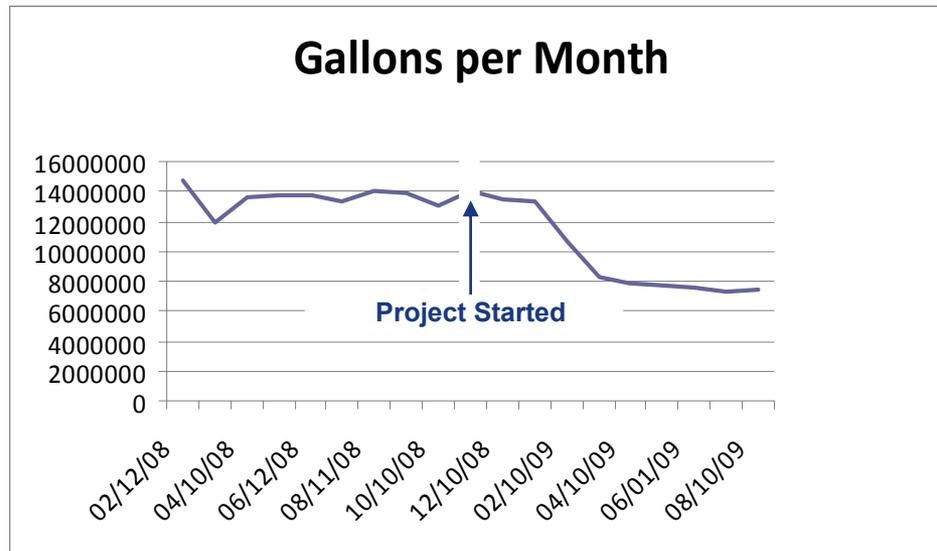
Financials Phase 3

	Unit Reduction
Electric	9.0 Million KwH
Gas	466 Thousand Therms
Oil	190 Thousand Therms
Water	101 Million Gallons



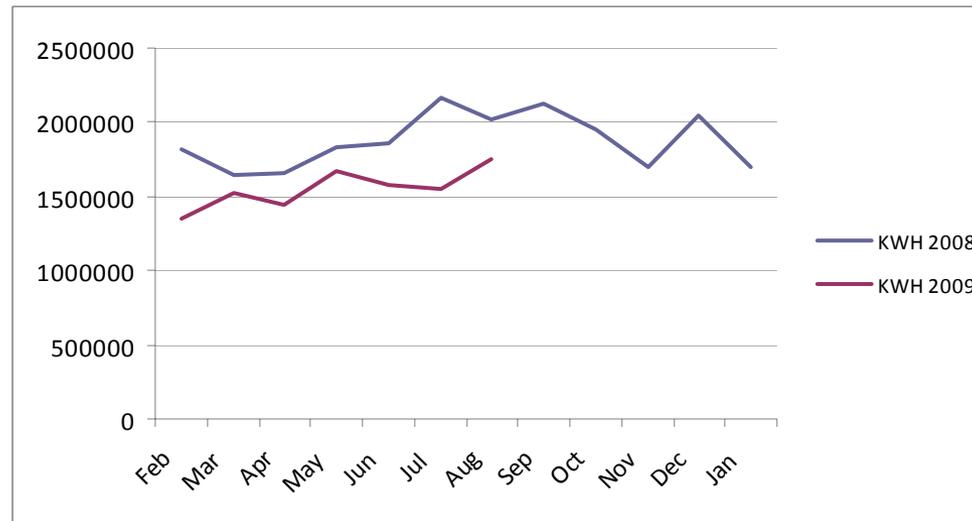


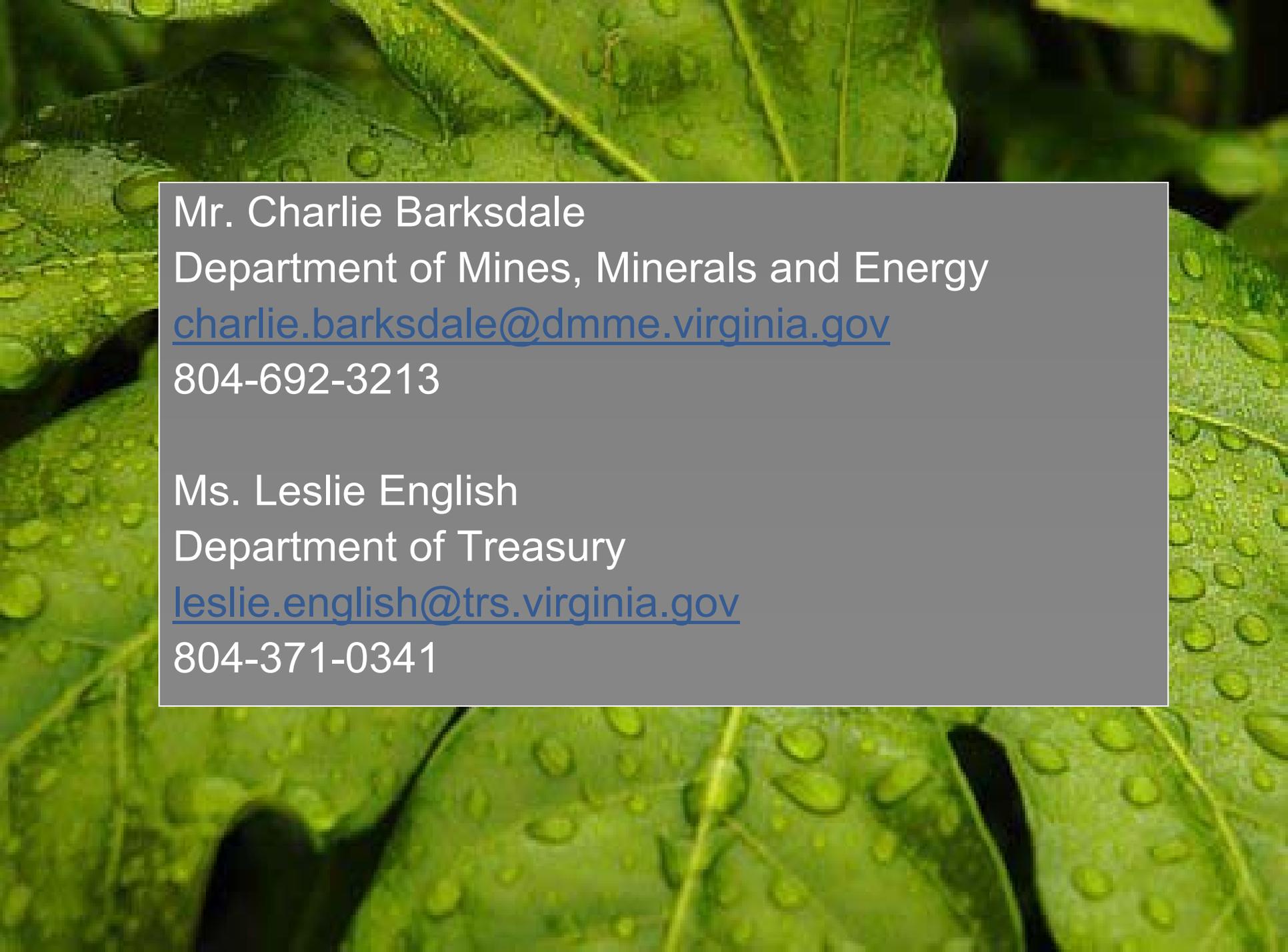
Greenville Water Use Verification





Greenville Electrical Use Verification





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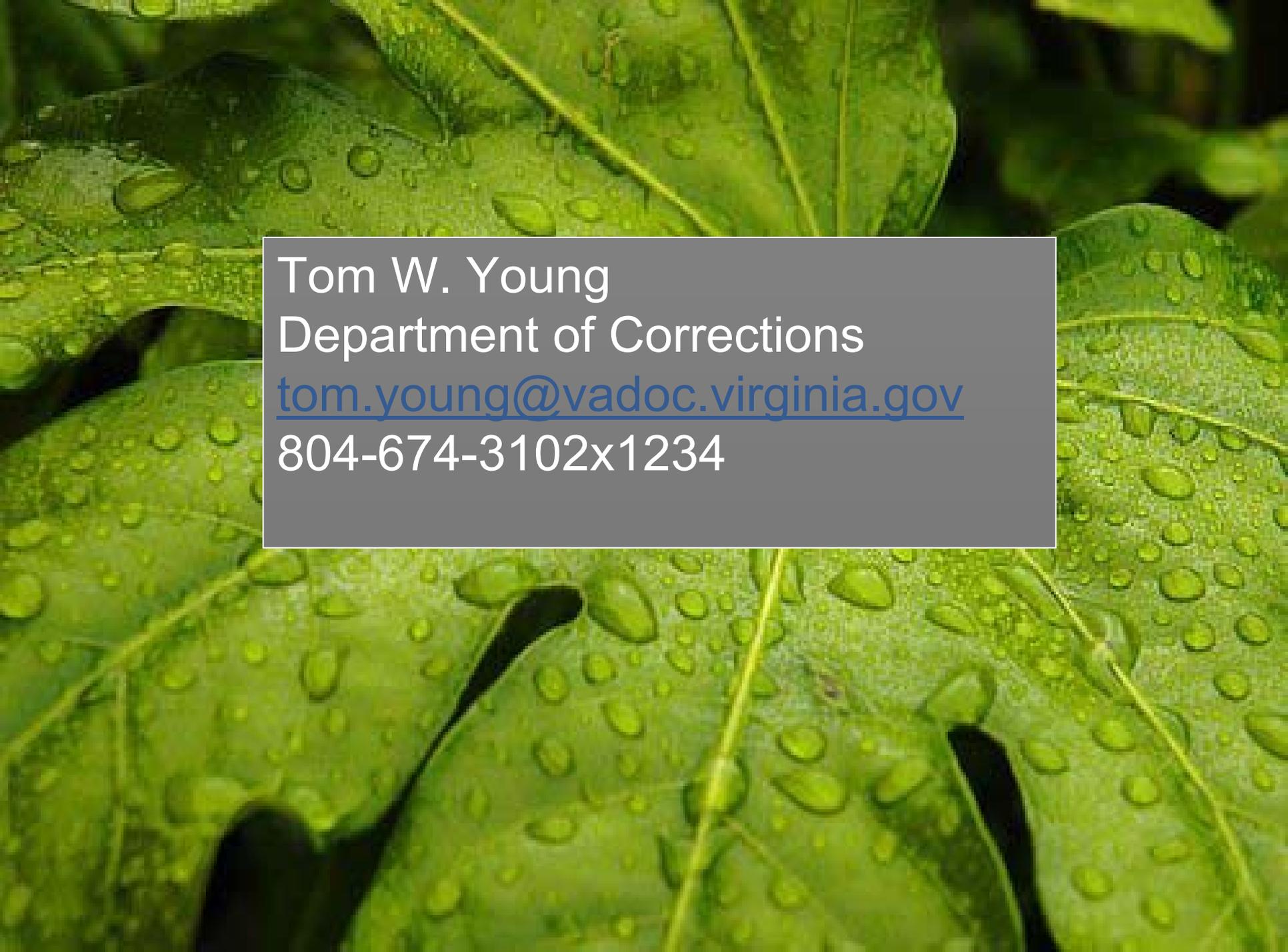
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The background of the slide is a close-up photograph of several large green leaves. The leaves are covered in numerous small, clear water droplets, which are in sharp focus. The lighting is bright, highlighting the texture of the leaves and the individual droplets. The overall color palette is dominated by various shades of green, from light lime to deep forest green.

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