

## IN THIS ISSUE

### ***Is the Form 830 Making a Comeback?*** **Pages 1 and 5**

**Linda Gray** - Senior Project Manager  
Hi-Line Engineering, LLC - Marietta, GA

For the uninitiated, the Form 830 construction contract was (and still is) a unit price contract designed for distribution system improvement projects.<sup>1</sup> It includes the labor and materials in the total contract price, regardless of the source of the materials. In this article, the Contract Lady takes you through a brief history of Form 830, the pros and cons, and contemplation of its return to popularity.

### ***Energy Efficiency Potential...Still Lots to Save!*** - Pages 2-4

**Tom Rooney, CEM** - Senior Project Manager  
GDS - Manchester, NH

What is Energy Efficiency Potential? And, Why Would You Want to Know? To help make it more understandable and tangible, this article will describe why one State commissioned such a report and how they are using its findings.

*TRANSACTIONS* is a service of  
**GDS Associates, Inc.**,  
a multi-service consulting and  
engineering firm formed in 1986.

For more information about GDS,  
our services, staff, and capabilities,  
please visit our website @

**www.gdsassociates.com**  
or call us @ **770-425-8100**.



### **IDEAS WANTED!**

We want to hear your ideas, feedback, and suggestions for this newsletter.

Email us at:

**info@gdsassociates.com**

## ***Is the Form 830 Making a Comeback?***

by Linda Gray (*aka* the **Contract Lady**)

The **Contract Lady** has been in the business of RUS contracts for longer than she cares to admit; in fact, since she was a mere child. She has seen more than one generation of RUS contracts, specifications, and rules. She remembers well the old days of obscure REA Bulletins before government web sites were even thought of, except maybe by Al Gore.

In the days when RUS was REA, and construction contracting was governed by Bulletin 40-6 and its many supplements, RUS allowed very little deviation from the rules. System Improvements went on the Form 830, and only non-site specific construction (line extension and pole replacements) went into the labor only Form 792. I loved those days, not only because I was young, but because I became a bona fide expert on the Form 830, and did many, many projects using that contract to bid and build power lines for clients.

For the uninitiated, the Form 830 construction contract was (and still is) a unit price contract designed for distribution system improvement projects.<sup>1</sup>

It includes the labor and materials in the total contract price, regardless of the source of the materials. So even if a co-op furnishes all of the materials, they must still be sold to the contractor at a contract price, and the co-op's material then appears in the unit material price which is then rolled into the total contract price and fully bonded.

In the '80's, when REA became the "kinder, gentler RUS," I could not fail to notice the mass exodus from using the Form 830 contract. With the relaxation of the procurement rules, the Form 792 labor only contract became the contract of choice to construct system improvements. The contractors love labor only contracts because the responsibility, cash flow and administration associated with providing the materials are out of their hands (and in yours). They are also out of the contract price, and many times a performance bond is not required because individual work orders are under \$100,000. From the contractor's viewpoint the Form 792 contract is almost as good as a cost-plus contract.

Co-ops also like using the Form 792. A labor only contract takes less time to bid and is easier to evaluate. Many say it takes burdensome, nit-picky work off the warehouse and accounting departments. But does it really? A Cooperative should manage, administer, and accrue the material and labor costs in the same way for a Form 830 contract as for any other RUS contract. And is cutting a couple of weeks out of the bid time really that important? Planning is the key.

*continued on Page 5*

<sup>1</sup> The "new" Form 830 replaces the Form 831 for transmission lines, and the Form 764 for substations. These contracts were substantially the same, and therefore were easy to combine into a multi-use form.



# Energy Efficiency Potential...*Still Lots to Save!*



**Maximum Achievable Cost Effective (aka "Economic") Energy Efficiency Potential** is defined as the potential for maximum penetration of energy efficient measures that are cost effective according to the Total Resource Cost test, and would be adopted given unlimited funding, and by determining the maximum market penetration that can be achieved with a concerted, sustained campaign involving highly aggressive energy efficiency programs and market interventions.

To help make it more tangible, this article will describe why one State commissioned such a report and how they are using its findings.

In an effort to estimate the remaining potential for conservation and energy efficiency in Connecticut and the Southwest Connecticut Region, the Connecticut Energy Conservation Management Board (ECMB) contracted with GDS in March 2003 to complete an independent assessment of the conservation and energy efficiency potential.

The Final Report presented estimates of the maximum achievable cost effective potential for electric energy and peak demand savings from energy efficiency measures in the geographic region of Connecticut served by UI and CL&P for the ten year period from 2003 through 2012.<sup>1</sup> Capturing the maximum achievable cost effective potential for energy efficiency in Connecticut will reduce peak demand by 12.5% (908 MW) and electric energy use by 13.4% (4,466 GWh) by 2012, resulting in zero growth in electric load from 2003 through 2012. Load reductions from load management and load response measures, which were not analyzed in this study, would be in addition to the energy efficiency savings. The net present value savings to ratepayers in Connecticut is \$1.8 billion if the maximum achievable cost effective potential is captured by CL&P's and UI's programs over the next decade. In addition, there are significant reductions in emissions from power plants in the State and there are other significant non-energy benefits.

## What Methodologies for Estimating Efficiency Potential in Each Sector are Used?

The maximum achievable potential estimate provides a measure of the maximum amount of energy that could be saved if most households and businesses in Connecticut replaced their standard efficient equipment with energy efficient technologies over the ten-year forecast period of the study. The estimation of the cost effective maximum achievable potential is based on the assumption that energy efficiency measures or bundles of measures would only be included in statewide efficiency programs when it was cost effective to do so.

The methodology used in the determination of the potential for electricity efficiency improvement in all sectors (residential, commercial, and industrial) followed similar steps, as outlined below:

1. Identification of data sources to be used in the study;
2. Identification of measures to be included in the assessment;
3. Determination of the characteristics of each measure including its incremental cost, energy savings, O&M savings, useful life, and peak demand impacts;
4. Calculation of initial cost-effectiveness screening metrics and sorting of measures from least cost to highest cost;
5. Collection and analysis of the baseline and forecasted characteristics of the market including equipment saturation levels and consumption and peak demand;
6. Integration of measure characteristics and baseline data to produce estimates of cumulative costs and savings across all measures (supply curves);
7. Determination of the cumulative technical and maximum achievable potentials using supply curves; and,
8. Determination of the annual maximum achievable potential over the ten-year forecast period.

<sup>1</sup>The full report can be downloaded from the Connecticut Department of Public Utility Control web site at <http://www.dpuc.state.ct.us/Electric.nsf/ByECMB?OpenView>

## Energy Efficiency Supply Curves

A key element in the approach used in this study was the use of energy efficiency supply curves. Supply curves are a common tool in economics. In the 1970s, conservation supply curves were developed by energy analysts as a means of ranking energy conservation investments alongside investments in energy supply in order to assess the least cost approach to meeting energy service needs.

The advantage of using an energy-efficiency supply curve is that it provides a clear, easy-to-understand framework for summarizing a variety of complex information about energy efficiency technologies, their costs, and the potential for energy savings. Properly constructed, an energy-efficiency supply curve avoids the double counting of energy savings across measures by accounting for interactions between measures, is independent of prices, and also provides a simplified framework to compare the costs of efficiency with the costs of energy supply technologies.

## Maximum Achievable Potential Supply Curves

The maximum achievable potential supply curve for the State of Connecticut for all sectors (residential, commercial and industrial) is shown in **Figure 1**. The y-axis of this curve represents the levelized cost per kWh saved for each point (measure) on the curve. The x-axis represents the savings as a percent of total electricity sales. This curve is particularly useful because it allows for a simple comparison of the costs and availability of energy efficiency with the characteristics of energy supply technologies. For example, the avoided cost for

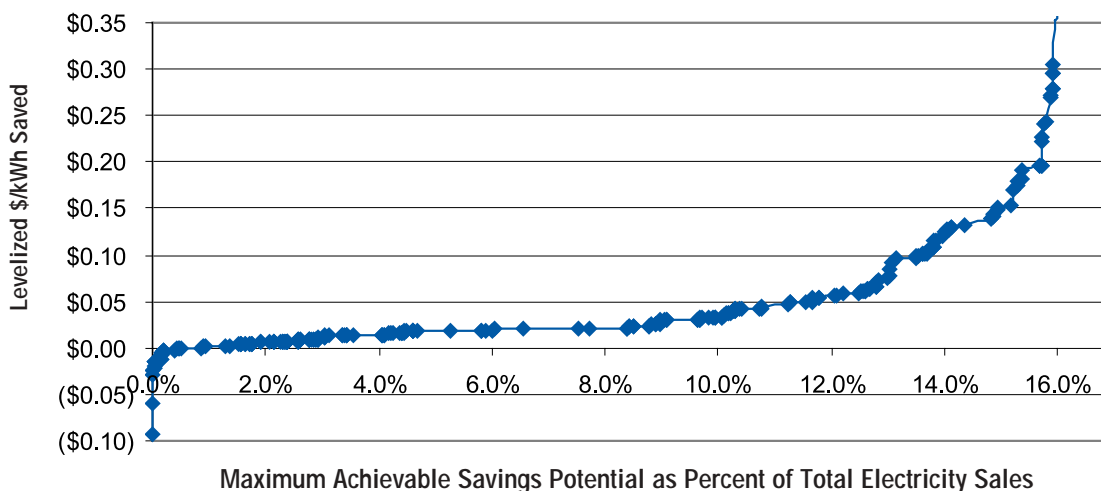
electricity can be drawn in at the appropriate point on the y-axis, indicating which measures would fall below the cost of supply options. In a typical energy efficiency supply curve, the base-case end-use consumption is reduced with each unit of energy efficiency that is acquired and adjustments for measures that interact need to be performed where necessary.

## The Key Findings:

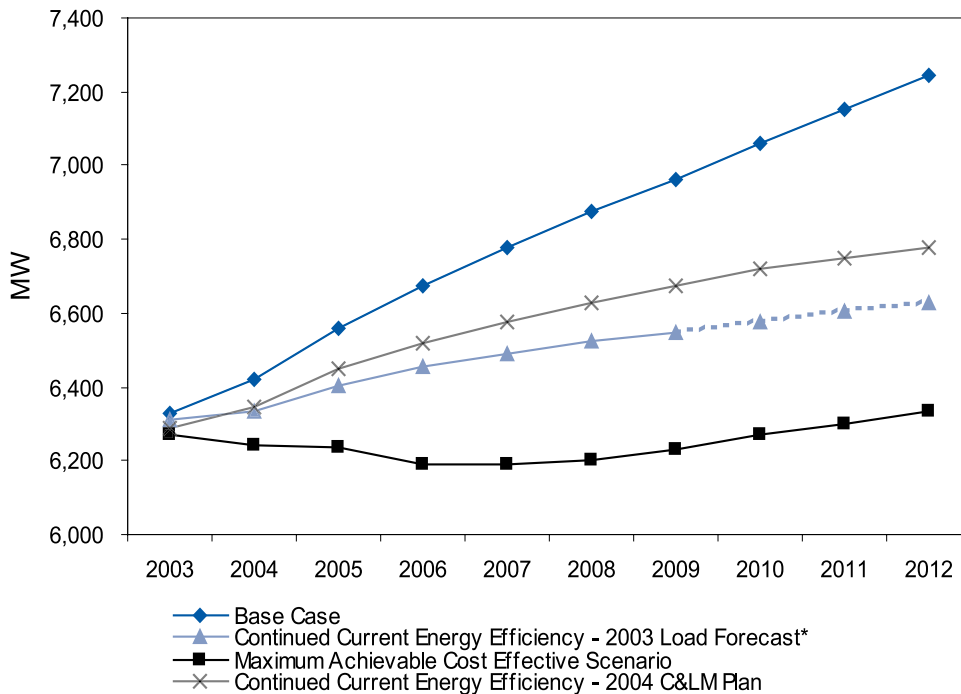
If all of the more than 200 cost effective energy efficiency measures analyzed in the study were implemented immediately where technically feasible, it was estimated that overall peak demand savings (technical potential) would be 1,748 megawatts (MW) on a statewide basis (a 24.1% reduction) and corresponding energy savings would be 8,021 GWh (a 24.2% reduction). If all measures that are cost effective were implemented, and consumer acceptance trends and the timing of equipment replacements in the market were factored in, the maximum achievable cost effective potential peak demand savings amount to 908 MW in 2012 (a 12.5% reduction) and corresponding energy savings would be 4,466 GWh (a 13.4% reduction).

**Figure 2** compares (1) a peak load (MW) forecast for the State of Connecticut assuming complete implementation of the maximum achievable cost effective potential scenario for energy efficiency, to (2) a "Base Case" scenario (the Base Case is the load forecast for the State of Connecticut that includes naturally occurring energy efficiency, but no "Public Benefits" funded conservation and load management programs), to (3) Connecticut's continued current level of energy efficiency efforts as stated in the utilities' 2003 load forecasts (equivalent to

**Figure 1. Maximum Achievable Potential for Energy Efficiency  
CT 2012 - All Sectors**



**Figure 2. Connecticut Summer Peak Load Forecast (MW):  
Base Case, Continued Current Energy Efficiency, and  
Maximum Achievable Cost Effective Potential**



\*For the “Continued Energy Efficiency” scenario from the 2003 Load Forecast, values for the CL&P service territory for years 2009 to 2012 are estimates based on the average of prior year values.

annual energy efficiency program funding of \$72.5 million) and to (4) Connecticut's continued current level of energy efficiency efforts as stated in the utilities' 2004 C&LM Plans. A similar comparison was conducted for energy (GWh) forecasts for the State and yielded a similar graph.

**How the Study Findings May Be Used**

The findings from this study identified the amount of energy efficiency potential that remains in the State of Connecticut and pinpoints markets and cost effective efficiency measures that can provide the most savings at the lowest cost. The study will be useful to legislators in helping them to understand the return on investment they can achieve for every "public benefits" dollar invested in energy efficiency in Connecticut. Moreover, the data in the study relating to costs, energy savings and environmental benefits of energy efficiency measures are very useful for making decisions on which programs should be done first, which energy efficiency technologies offer the most savings, which technologies are most cost effective, and how the environment can benefit from aggressive programs. Finally, the study provides well-documented evidence of the large magnitude

of net present value savings to the State available from energy efficiency over the next decade - almost 2 billion dollars.

This study did not seek to answer the larger resource-planning question of exactly how much energy efficiency ought to be purchased as part of an overall portfolio of electric resources for the State. However, the study is a critical source of information for policy-makers and decision-makers in Connecticut who are participating in funding decisions for existing and future energy efficiency programs in the State.

**Note:** This article is based upon a GDS paper presented at the August 2004 American Council for an Energy Efficient Economy Summer Study on Building Energy Efficiency. This paper was approved for release by the Connecticut Energy Conservation Management Board.

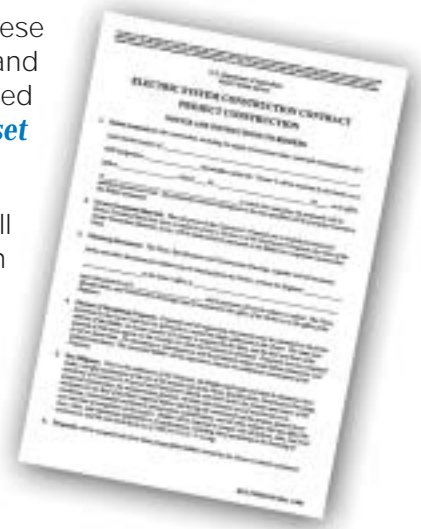
**For more information or to comment on this article, contact Tom Rooney, CEM at 603.656.0336 or email: [tom.rooney@gdsassociates.com](mailto:tom.rooney@gdsassociates.com)**



continued from Page 1

The Contract Lady has always had her core clientele of Form 830 users. These Cooperatives feel strongly that they have less work, and better control and protection with a properly administered Form 830 contract. Recently, I have noted greater interest in labor and material contracts from clients. ***So...Is the Form 830 set for a comeback?***

RUS, after many decades of working with Cooperative's construction programs is still not convinced that hourly rate construction, even if competitively negotiated with several contractors, is the best or the least expensive way to manage construction costs. Also, materials management, or rather the lack of it, continues to be of concern to RUS. Therefore, unit price contracts are still required by the regulations governing Cooperatives, mainly 7CFR1724 and 1726. These rules, as recently amended on Friday the 13th in February, 2004 (an ominous date) set forth the new requirements. One of these requirements is that the materials be included in the contract price. This is true for the Form 790<sup>2</sup> and the Form 830, and if I had to choose between the two contracts, I would use the Form 830.



Here are several advantages to using a Form 830 to construct distribution system improvements:

1. **The Contractor takes responsibility for materials. The Cooperative furnished materials become the property of the Contractor and are covered under the performance bond for damage or loss. Cooperatives that do not wish to purchase, manage and account for large inventories can have the Contractor furnish the materials. Any items peculiar to the Cooperative's operations can be specified right down to the catalog number.**
2. **There is better internal control of materials. All materials must be accounted for under the Form 830 contract. This includes special equipment. The Contractor is charged for new materials and salvaged materials. Any materials not used or returned belong to the Contractor, but he is charged for them at a price stated in the contract. This includes any salvageable items.**
3. **There are formal closeout documents. With a labor only contract the Contractor is often paid exactly what is on his invoices, and release of lien documents are all but forgotten. The Form 830 closeout consists of the Form 254 which requires a full unit count, and reconciliation of materials. Also, the Contractor is required to release all potential liens for supplied labor and materials. There is also a Certificate of Completion which formally closes the contract and restates the terms of the closing as set forth in the contract.**
4. **There is a full Performance Bond. Constructing without a performance bond is gambling that your Contractor will not abandon you for a more lucrative project. With a performance bond, called a Contractor's Bond by RUS, the insurance company backing the bond will pay the difference between what you would have paid the defaulting Contractor and what it actually cost you to complete the contract up to the face value of the bond. There are other advantages to bonding, but I'll have to save that discussion for another time.**
5. **The construction receives a full inspection immediately after construction is complete. With the exception of latent defects, the Contractor must clean up all deviations from the specifications before final payment is made. With labor only contracts, inspections are often limited to the percentage required under work order procedures, and many times the Contractor has been paid in full and has no incentive to return for clean-up.**

There are reasons beyond those listed above to use a proven contract like the RUS Form 830 when you construct your work plan. Most of the reasons listed above have work order procedures as their primary focus. So, the next time you are bidding a large system improvements contract, consider using the Form 830 if for no other reason than to tighten up and fine tune your work order procedures.

For more information or to comment on this article, contact Linda Gray at 770.426.0819 or email: [linda.gray@hi-line-engineering.com](mailto:linda.gray@hi-line-engineering.com)



<sup>2</sup> RUS has moderated its stance on including materials in the Form 790. See the letter from Blaine Stockton to All Borrowers dated April 14, 2004.

## GDS Associates, Inc.

### Corporate Headquarters:

1850 Parkway Place  
Suite 800  
Marietta, GA 30067  
770-425-8100  
Fax: 770-426-0303  
www.gdsassociates.com

### Texas:

919 Congress Avenue  
Suite 800  
Austin, TX 78701  
512-494-0369  
Fax: 512-494-0205

### New Hampshire:

1181 Elm Street  
Suite 205  
Manchester, NH 03101  
603-656-0336  
Fax: 603-656-0301

### Wisconsin:

437 S. Yellowstone Drive  
Suite 212  
Madison, WI 53719  
608-273-0182  
Fax: 608-273-0312

### Hi-Line Engineering, LLC and GreenLine Environmental

### Georgia:

1850 Parkway Place  
Suite 800  
Marietta, GA 30067  
770-426-0819  
Fax: 770-426-0303  
www.hi-line-engineering.com

### Alabama:

1826 Opelika Road  
Auburn, AL 36830  
334-887-3297  
Fax: 334-887-3298  
www.green-line-environmental.com

We welcome your comments and suggestions about our newsletter. Please forward any comments to:  
[info@gdsassociates.com](mailto:info@gdsassociates.com)

We hope you find our newsletter informative, if you know a colleague that would like to receive a free subscription, just email us their information to  
[info@gdsassociates.com](mailto:info@gdsassociates.com)  
and we'll make sure they start receiving the next issue.



**GDS Associates, Inc.**  
Engineers and Consultants

### Mission Statement:

*To help our clients succeed by anticipating and understanding their needs, and by efficiently delivering quality services with confidence and integrity.*

GDS Associates, Inc. is a multi-service consulting and engineering firm formed in 1986 and now employs a staff of over 100 in five locations across the U.S. Our broad range of expertise focuses on clients associated with, or affected by, electric, gas, and water utilities. In addition, we offer information technology, market research, and statistical services to a diverse client base. The size and depth of our firm permits us to offer clients multiple sources of assistance, ensuring complete, competent, and timely service. Some of the consulting areas in which GDS has specialized skills are:

1. Power Supply Planning Services
2. Financial Analysis and Rate Services
3. Generation Services
4. Regulatory and Restructuring Services
5. Renewable Energy Resources, Distributed Generation, and Combined Heat and Power Services
6. Energy Efficiency and Demand-Side Management Services
7. Electric Planning and Design Services (Hi-Line Engineering, LLC)
8. Environmental Management Services (GreenLine Environmental)
9. Deregulation and Retail Energy Procurement Services
10. Utility Privatization Services
11. Water and Wastewater Utility Consulting Services
12. Natural Gas Consulting Services
13. Statistics and Market Research Services
14. Information Technology Services

GDS consultants are recognized leaders in their respective fields, dedicated to their clients, innovative in their approach to meeting unique challenges, and known for consistently being available when needed. GDS strives to develop long-term client relationships. Our goal is to be a wise investment in consulting services for our clients.

Hi-Line Engineering, LLC is a wholly owned subsidiary of GDS Associates, Inc. Hi-Line specializes in providing safe, reliable, and efficient planning and design for electric cooperatives, investor owned utilities, municipal electric systems, and the military in all types of terrain and all three NESC loading districts. Hi-Line's areas of expertise include:

1. Overhead Distribution Line Design and Staking
2. Underground Distribution System Design
3. Inspection and Inventory
4. Contract Administration
5. System Planning and Analysis
6. Right-of-Way Vegetation Management
7. GIS/GPS Mapping and Inventory
8. Training Services
9. Specialized Design Services

Hi-Line uses the latest technology to increase efficiency and accuracy. Our commitment to client satisfaction and diversity of expertise ensures that we provide the highest quality of service.

GreenLine Environmental, a division of Hi-Line Engineering, LLC, provides environmental services specially geared to the electric utility industry. GreenLine's staff is composed of registered foresters and ISA certified arborists. Our experience in both power line design and operation complement our expertise in vegetation management on right-of-ways. GreenLine offers the following services to utilities, municipals, developers, industry, and the military:

1. Right-of-Way Vegetation Management
2. GIS/GPS Mapping and Inventory
3. Environmental Assessments
4. Urban Forestry Consulting

Our goal is to use our technology and experience to provide efficient long-term control of trees and brush in harmony with the biological ecosystem.



**GDS Associates, Inc.**  
Engineers and Consultants

1850 Parkway Place  
Suite 800  
Marietta, GA 30067

RETURN SERVICE REQUESTED

PreSorted Standard  
U.S. Postage  
PAID  
Kennesaw, GA  
Permit No. 555