

New Jersey's Clean Energy Program

LGEA Exit Meeting for: Franklin Borough Board of Education

TRC Energy Services

September 28, 2018

Introductions



- Franklin Borough Board of Education
 - JR Giacchi Superintendent
 - Barbara Decker Business Administrator
- NJ Clean Energy Program
 - Brian DeLuca, CEM TRC Program Manager
 - Moussa Traore TRC Auditor
 - Sarah Walters TRC Account Manager
 - Mike Thulen ESIP Coordinator

Agenda



- The audit process overview
- Energy use & existing conditions
- Review of Energy Conservation Measures (ECMs) identified
- Questions or concerns regarding the draft audit report
- Overview of NJCEP equipment incentives
- Next steps for Franklin Borough Board of Education

LGEA Process



- Application Approval
- Scheduling Call
- Audit
- Benchmarking & Analysis
- Draft Report
- Exit Meeting Presentation
- Final Report





Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs
- On-Site Generation Solar PV

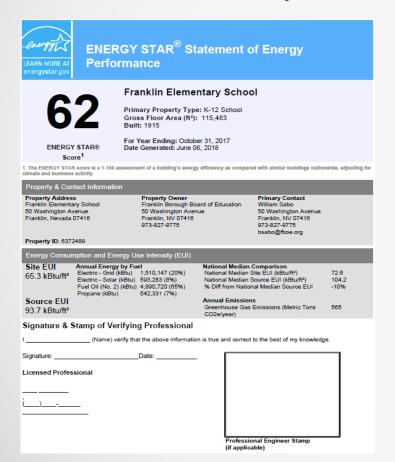
Sites Visited/Analyzed

- Franklin Borough School
- Business Office Trailer

Benchmarking



Franklin Elementary School



Building Name	ENERGY STAR Score
Franklin Elementary School	62
Business Office Trailer	N/A

ENERGY STAR Scores are percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide.

All Opportunities



Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO₂e Emissions Reduction (lbs)
Lighting Upgrades	192,696	37.5	0.0	\$23,282.11	\$127,228.56	\$18,420.00	\$108,808.56	4.7	194,043
Install LED Fixtures	45,594	9.2	0.0	\$5,490.18	\$38,089.17	\$3,730.00	\$34,359.17	6.3	45,913
Retrofit Fluorescent Fix tures with LED Lamps and Drivers	1,229	0.3	0.0	\$175.76	\$1,094.00	\$80.00	\$1,014.00	5.8	1,238
Retrofit Fixtures with LED Lamps	144,874	27.9	0.0	\$17,495.92	\$86,001.84	\$14,610.00	\$71,391.84	4.1	145,887
Install LED Exit Signs	999	0.1	0.0	\$120.25	\$2,043.55	\$0.00	\$2,043.55	17.0	1,006
Lighting Control Measures	37,873	7.6	0.0	\$4,574.42	\$33,374.00	\$4,700.00	\$28,674.00	6.3	38,137
Install Occupancy Sensor Lighting Controls	32,736	6.8	0.0	\$3,955.90	\$31,498.00	\$4,100.00	\$27,398.00	6.9	32,965
Install High/Low Lighitng Controls	5,137	0.7	0.0	\$618.52	\$1,876.00	\$600.00	\$1,276.00	2.1	5,172
Motor Upgrades	9,484	2.1	0.0	\$1,142.01	\$39,969.40	\$0.00	\$39,969.40	35.0	9,550
Premium Efficiency Motors	9,484	2.1	0.0	\$1,142.01	\$39,969.40	\$0.00	\$39,969.40	35.0	9,550
Variable Frequency Drive (VFD) Measures	19,116	4.8	0.0	\$2,301.90	\$24,585.70	\$1,400.00	\$23,185.70	10.1	19,250
Install VFDs on Constant Volume (CV) HVAC	7,990	1.9	0.0	\$962.16	\$10,158.50	\$1,400.00	\$8,758.50	9.1	8,046
Install VFDs on Hot Water Pumps	11,126	3.0	0.0	\$1,339.74	\$14,427.20	\$0.00	\$14,427.20	10.8	11,204
Electric Unitary HVAC Measures	7,786	3.9	0.0	\$937.60	\$12,243.60	\$552.00	\$11,691.60	12.5	7,841
Install High Efficiency Electric AC	7,786	3.9	0.0	\$937.60	\$12,243.60	\$552.00	\$11,691.60	12.5	7,841
Gas Heating (HVAC/Process) Replacement	0	0.0	193.4	\$2,439.80	\$143,709.43	\$7,732.00	\$135,977.43	55.7	31,640
Install High Efficiency Steam Boilers	0	0.0	193.4	\$2,439.80	\$143,709.43	\$7,732.00	\$135,977.43	55.7	31,640
Domestic Water Heating Upgrade	0	0.0	49.3	\$639.61	\$4,819.92	\$300.00	\$4,519.92	7.1	6,980
Install Tankless Water Heater	0	0.0	26.0	\$337.47	\$4,705.20	\$300.00	\$4,405.20	13.1	3,683
Install Low-Flow Domestic Hot Water Devices	0	0.0	23.3	\$302.14	\$114.72	\$0.00	\$114.72	0.4	3,297
Food Service Equipment & Refrigeration Measures	1,618	0.0	0.0	\$194.88	\$2,192.60	\$125.00	\$2,067.60	10.6	1,630
Refrigeration Controls	1,618	0.0	0.0	\$194.88	\$2,192.60	\$125.00	\$2,067.60	10.6	1,630
Plug Load Equipment Control - Vending Machine	1,612	0.0	0.0	\$194.09	\$230.00	\$0.00	\$230.00	1.2	1,623
Vending Machine Control	1,612	0.0	0.0	\$194.09	\$230.00	\$0.00	\$230.00	1.2	1,623
Custom Measures	21,770	0.0	0.0	\$2,527.49	\$6,175.00	\$0.00	\$6,175.00	2.4	21,922
Computer Power Management Software	21,770	0.0	0.0	\$2,527.49	\$6,175.00	\$0.00	\$6,175.00	2.4	21,922
TOTALS	291,955	55.9	242.7	\$38,233.91	\$394,528.21	\$33,229.00	\$361,299.21	9.4	332,616

^{* -} All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

^{** -} Simple Payback Period is based on net measure costs (i.e. after incentives).





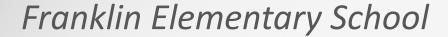
*Opportunities considered cost effective have a payback period less than the expedited life of the measure

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel 3 Savings (MMBtu)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades	192,696	37.5	0.0	0.0	\$23,282.11	\$127,228.56	\$18,420.00	\$108,808.56	4.7	194,043
ECM 1 Install LED Fixtures	45,594	9.2	0.0	0.0	\$5,490.18	\$38,089.17	\$3,730.00	\$34,359.17	6.3	45,913
ECM 2 Retrofit Fluorescent Fixtures with LED Lamps and Drivers	1,229	0.3	0.0	0.0	\$175.76	\$1,094.00	\$80.00	\$1,014.00	5.8	1,238
ECM 3 Retrofit Fixtures with LED Lamps	144,874	27.9	0.0	0.0	\$17,495.92	\$86,001.84	\$14,610.00	\$71,391.84	4.1	145,887
ECM 4 Install LED Exit Signs	999	0.1	0.0	0.0	\$120.25	\$2,043.55	\$0.00	\$2,043.55	17.0	1,006
Lighting Control Measures	37,873	7.6	0.0	0.0	\$4,574.42	\$33,374.00	\$4,700.00	\$28,674.00	6.3	38,137
ECM 5 Install Occupancy Sensor Lighting Controls	32,736	6.8	0.0	0.0	\$3,955.90	\$31,498.00	\$4,100.00	\$27,398.00	6.9	32,965
ECM 6 Install High/Low Lighting Controls	5,137	0.7	0.0	0.0	\$618.52	\$1,876.00	\$600.00	\$1,276.00	2.1	5,172
Variable Frequency Drive (VFD) Measures	19,116	4.8	0.0	0.0	\$2,301.90	\$24,585.70	\$1,400.00	\$23,185.70	10.1	19,250
ECM 7 Install VFDs on Constant Volume (CV) HVAC	7,990	1.9	0.0	0.0	\$962.16	\$10,158.50	\$1,400.00	\$8,758.50	9.1	8,046
ECM 8 Install VFDs on Hot Water Pumps	11,126	3.0	0.0	0.0	\$1,339.74	\$14,427.20	\$0.00	\$14,427.20	10.8	11,204
Electric Unitary HVAC Measures	7,786	3.9	0.0	0.0	\$937.60	\$12,243.60	\$552.00	\$11,691.60	12.5	7,841
ECM 9 Install High Efficiency Electric AC	7,786	3.9	0.0	0.0	\$937.60	\$12,243.60	\$552.00	\$11,691.60	12.5	7,841
Domestic Water Heating Upgrade	0	0.0	49.3	49.3	\$639.61	\$4,819.92	\$300.00	\$4,519.92	7.1	6,980
ECM 10 Install Tankless Water Heater	0	0.0	26.0	26.0	\$337.47	\$4,705.20	\$300.00	\$4,405.20	13.1	3,683
ECM 11 Install Low-Flow Domestic Hot Water Devices	0	0.0	23.3	23.3	\$302.14	\$114.72	\$0.00	\$114.72	0.4	3,297
Food Service Equipment & Refrigeration Measures	1,618	0.0	0.0	0.0	\$194.88	\$2,192.60	\$125.00	\$2,067.60	10.6	1,630
ECM 12 Refrigeration Controls	1,618	0.0	0.0	0.0	\$194.88	\$2,192.60	\$125.00	\$2,067.60	10.6	1,630
Plug Load Equipment Control - Vending Machine	1,612	0.0	0.0	0.0	\$194.09	\$230.00	\$0.00	\$230.00	1.2	1,623
ECM 13 Vending Machine Control	1,612	0.0	0.0	0.0	\$194.09	\$230.00	\$0.00	\$230.00	1.2	1,623
Custom Measures	21,770	0.0	0.0	0.0	\$2,527.49	\$6,175.00	\$0.00	\$6,175.00	2.4	21,922
ECM 14 Computer Power Management Software	21,770	0.0	0.0	0.0	\$2,527.49	\$6,175.00	\$0.00	\$6,175.00	2.4	21,922
TOTALS	282,471	53.8	49.3	49.3	\$34,652.10	\$210,849.38	\$25,497.00	\$185,352.38	5.3	291,426

8

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^{** -} Simple Payback Period is based on net measure costs (i.e. after incentives).





Ī	Energy Conservation Measure	Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Natural Gas Savings (MMSlu)	Annual No. 2 Fuel Oil Savings (MMBtu)	Annual Propane Savings (MMElu)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimaled Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO _y e Emissions Reduction (Bs)
	Lighting Upgrades		190,600	36.8	0.0	0.0	0,0	8.0	\$22,952.20	\$125,268.76	\$18,170.00	\$107,098.76	4.7	191,942
ECM 0	Install High Performance T-5 or T-8 Flutures	Yes	0	0.0	0.0	0.0	0.0	0.0	\$0.00	\$0.00	\$0.00	\$0.00	0.0	0
ECM 0	Retrofit Fixtures with High Performance T-5 or T-8 Lamps and Ballasts	Yes	0	0.0	0.0	0.0	0.0	0.0	\$0.00	\$0.00	\$0.00	\$0.00	0.0	0
ECM 0	Delamp T-8 Fixtures & Add Reflectors	Yes	0	0.0	0.0	0.0	0.0	0.0	\$0.00	\$0.00	\$0.00	\$0.00	0.0	0
ECM 1	Install LED Fixtures	Yes	45,594	9.2	0.0	0.0	0.0	0.0	\$5,490.18	\$38,089.17	\$3,730.00	\$34,359.17	6.3	45,913
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	493	0.1	0.0	0.0	0.0	0.0	\$59.32	\$392.00	\$20.00	\$372.00	6.3	496
ECM 3	Retrofit Fixtures with LED Lamps	Yes	143,524	27.4	0.0	0.0	0.0	0.0	\$17,282.44	\$84,744.04	\$14,420.00	\$70,324.04	4.1	144,528
ECM 4	Install LED Exit Signs	Yes	999	0.1	0.0	0.0	0.0	0.0	\$120.25	\$2,043.55	\$0.00	\$2,043.55	17.0	1,006
- Constitution	Lighting Control Measures	-	37,502	7.4	0.0	0.0	.0.0	0.0	\$4,515.75	\$32,602.00	\$4,630.00	\$27,972.00	8.2	37,764
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	32,365	6.7	0.0	0.0	0.0	0.0	\$3,897.23	\$30,726.00	\$4,030.00	\$26,696.00	6.8	32,591
ECM 6	Install High/Low Lighting Controls	Yes	5,137	0.7	0.0	0.0	0.0	0.0	\$618.52	\$1,876.00	\$600.00	\$1,276.00	2.1	5,172
and desired	Motor Upgrades		9,484	2.1	0.0	0.0	0.0	0,0	\$1,142.01	\$39,969.40	\$0.00	\$39,969.40	35.0	9,550
	Premium Efficiency Motors	No	9,484	2.1	0.0	0.0	0.0	0.0	\$1,142.01	\$39,969.40	\$0.00	\$39,969.40	35.0	9,550
	Variable Frequency Drive (VFD) Measures		19,116	4,8	0.0	0.0	0.0	0.0	\$2,301.90	\$24,585.70	\$1,400.00	\$23,185.70	10.1	19,250
ECM 7	Install VFDs on Constant Volume (CV) HVAC	Yes	7,990	1.9	0.0	0.0	0.0	0.0	\$962.16	\$10,158.50	\$1,400.00	\$8,758.50	9.1	8,046
ECM 8	Install VFDs on Hot Water Pumps	Yes	11,126	3.0	0.0	0.0	0.0	0.0	\$1,339.74	\$14,427.20	\$0.00	\$14,427.20	10.8	11,204
	Electric Unitary HVAC Measures		7,786	3.9	0.0	0.0	8.0	0,0	\$937.60	\$12,243.60	\$552.00	\$11,891.60	12.5	7,841
ECM 9	Install High Efficiency Electric AC	Yes	7,786	3.9	0.0	0.0	0.0	0.0	\$937.60	\$12,243.60	\$552.00	\$11,691.60	12.5	7,841
	Gas Heating (HVAC/Process) Replacement			0.0	0.0	193.4	0.0	193.4	\$2,439.80	\$143,789.43	\$7,732.00	\$135,977.43	55.7	31,640
	Install High Efficiency Steam Boilers	No	0	0.0	0.0	193.4	0.0	193.4	\$2,439.80	\$143,709.43	\$7,732.00	\$135,977.43	55.7	31,640
	Domestic Water Heating Upgrade	1000	9	0.0	0.0	0.0	49.3	49.3	\$639,61	\$4,819.92	\$300.00	\$4,519.92	7.1	6,980
ECM 10	Install Tankless Water Heater	Yes	0	0.0	0.0	0.0	26.0	26.0	\$337.47	\$4,705.20	\$300.00	\$4,405.20	13.1	3,683
ECM 11	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	0.0	0.0	23.3	23.3	\$302.14	\$114.72	\$0.00	\$114.72	0.4	3,297
-	Food Service Equipment & Refrigeration Measures		1,618	0.0	0.0	0.0	0.0	0.0	\$19488	\$2,192.60	\$125.00	\$2,067.60	18.6	1,630
ECM 12	Refrigeration Controls	Yes	1,618	0.0	0.0	0.0	0.0	0.0	\$194.88	\$2,192.60	\$125.00	\$2,067.60	10.6	1,630
	Plug Load Equipment Control - Vending Machine		1,612	0.0	0.0	0.0	0.0	0.0	519409	\$230.00	50.00	\$230.00	1.2	1,623
ECM 13	Vending Machine Control	Yes	1,612	0.0	0.0	0.0	0.0	0.0	\$194.09	\$230.00	\$0.00	\$230.00	1.2	1,623
	Custom Measures		21,776	0.0	0.0	0.0	9.0	0.0	\$2,527.49	\$6,175.00	\$0.00	\$6,175.00	2.4	21,922
ECM 14	Computer Power Management Software	Yes	21,770	0.0	0.0			0.0	\$2,527.49	\$6,175.00	\$0.00	\$6,175.00	2.4	21,922
	TOTALS FOR HIGH PRIORITY MEASURES	100 0000	280,014	53.0	0.0	0.0	49.3	49.3	\$34,263.52	\$208,117.58	\$25,177.00	\$182,940.58	5.3	288,952
	TOTALS FOR ALL EVALUATED MEASURES		289,498	55.1	0.0	193.4	49.3	242.7	\$37,845.34	\$391,796.42	\$32,909.00	\$358,887.42	9.5	330,142

^{* -} All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

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Business Office Trailer



	Energy Conservation Measure	Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Ŭ	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO₂e Emissions Reduction (lbs)
	Lighting Upgrades		2,086	0.7	0.0	\$329.92	\$1,959.80	\$250.00	\$1,709.80	5.2	2,101
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	736	0.2	0.0	\$116.44	\$702.00	\$60.00	\$642.00	5.5	741
ECM 2	Retrofit Fixtures with LED Lamps	Yes	1,350	0.4	0.0	\$213.48	\$1,257.80	\$190.00	\$1,067.80	5.0	1,359
	Lighting Control Measures		371	0.1	0.0	\$58.67	\$772.00	\$70.00	\$702.00	12.0	374
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	371	0.1	0.0	\$58.67	\$772.00	\$70.00	\$702.00	12.0	374
	TOTALS FOR HIGH PRIORITY MEASURES		2,457	0.8	0.0	\$388.59	\$2,731.80	\$320.00	\$2,411.80	6.2	2,474
	TOTALS FOR ALL EVALUATED MEASURES		2,457	0.8	0.0	\$388.59	\$2,731.80	\$320.00	\$2,411.80	6.2	2,474

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- Reduce Air Leakage
- Close Doors and Windows
- Develop a Lighting Maintenance Schedule
- Ensure Lighting Controls Are Operating Properly
- Use Fans to Reduce Cooling Load
- Use Window Treatments/Coverings
- Clean and/or Replace HVAC filters
- Check and Seal Duct Leakage
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Plug Load Controls
- Water Conservation

See individual reports for specific EE practices by building

Clean Energy Program Portfolio



ELIGIBLE SECTORS

Commercial, Industrial, Government, Non-Profit, Institutional and Multifamily

Equipment Rebates:

- SmartStart Retrofit
- SmartStart New Construction
- Direct Install
- Large Energy Users

INCENTIVE PROGRAMS Whole Buildings:

- Pay for Performance Existing Buildings
- Pay for Performance New Construction

Energy Generation:

Combined Heat and Power (CHP)

OTHER PROGRAMS

Renewable Energy Generation:

SREC Registration Program (SRP)

* eligible programs are highlighted in yellow

SmartStart: Overview



- Two types of incentives for high efficiency equipment installation:
 - Prescriptive
 - Custom
- Project Categories:
 - New Construction
 - Renovation
 - Remodeling
 - Equipment Replacement
- Project pre-approval required for lighting and custom measures
- Incentives up to \$500,000 per electric account & \$500,000 per natural gas account
- Specific incentives and individual applications for Lighting, HVAC,
 VFDs, Refrigeration, Controls and more!

Direct Install: Overview



- Turn-key retrofit program to replace outdated and inefficient equipment, including lighting, HVAC, refrigeration, etc.
- Open to Small to Mid-Sized Commercial and Industrial facilities with an average electric demand ≤ 200 kW
- Provides incentives of up to 70% of the installed cost
- Incentives are paid directly to the contractor
 - Customer only pays remaining 30% of installed cost
 - \$125,000 project/building cap
 - \$250,000 per entity cap (up to \$500,000 if using ESIP)
- Participating contractors provide support and process all paperwork
- Fast turnaround time: Average length of time for job completion (4-6 months)

Direct Install:



Participating Contractor

Lime Energy

Tony McCoy

855-600-5463

njdi@lime-energy.com

Recommended NJCEP Incentives per Building



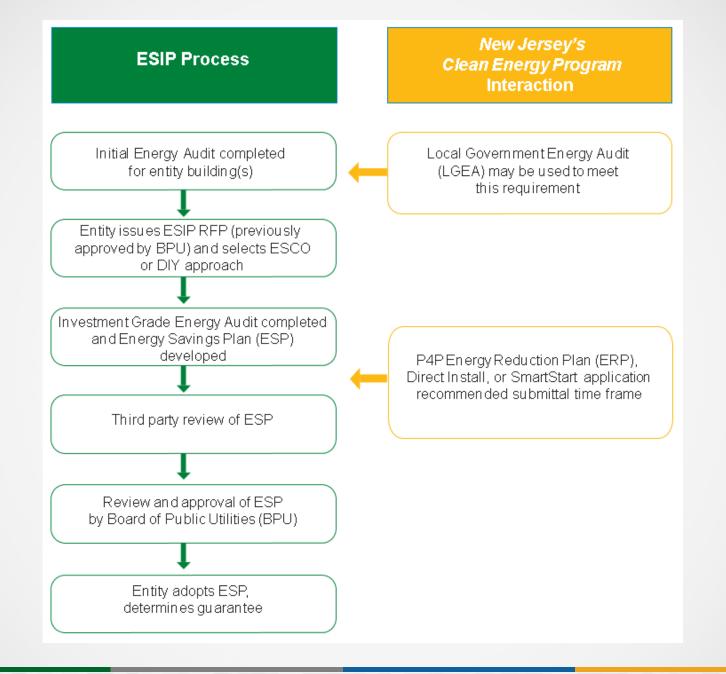
Franklin Borough BOE	SmartStart	Direct Install
Franklin Elementary School	X	Х
Business Office Trailer	X	Х

ESIP



Energy Savings Improvement Program (ESIP)

- Provides alternative financing for energy savings projects at public institutions. Value of energy savings leveraged to pay for cost of EE projects over a 15 year contract. Does not count as debt/require voter approval.
- Requires an audit as 1st step (LGEA satisfies requirement)
- ESIP participation question on LGEA application
- Program administered directly by BPU





FOR MORE INFORMATION

ESIP

Mike Thulen

ESIP Coordinator

Office: 609-777-3338

Cell: 732-330-2419

ESIP@bpu.nj.gov

Questions







FOR MORE INFORMATION

Visit NJCleanEnergy.com
Call (866) NJSMART

Jim Friedl

Outreach Manager 732-855-6543 jfriedl@trcsolutions.com