

## The Problem

### Tools Cost Money

Why did we need a business case?

- No OSHA ergonomics standard
- These tools cost \$1500-\$3500 each
- Would also need repair and new batteries, and replacement in 5-8 years
- Each crew would need at least 2
- Not in the tool budget
- The tool committee required a business case for every new tool
- We Energies had money in a capital fund—these were expensive enough to qualify

What stands in the way of the business case? Partly: Beliefs that MSDs are caused by something other than work practices

Supposed cause	Supposed solution
Stupid and deliberate acts	Fix the workers (training)
The aging workforce	Fix the workers (retirement)
Lack of stretching	Fix the workers
Weekend warriors	Fix the workers
Overreporting	Fix the data
Something easy (like for acute injuries)	An easy fix (for a long term injury)

## Method

### Prove how injurious manual tools are and how much safer, easier battery powered tools will be to use

The connector crimping task



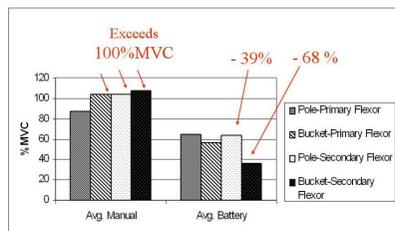
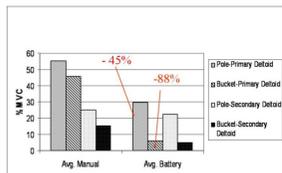
Cutting wire—before and after



### Lab results:

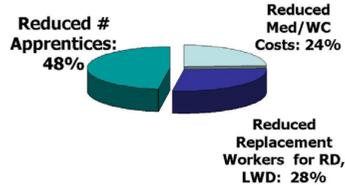
manual tools: <1% capable

battery tools: nearly 100% capable

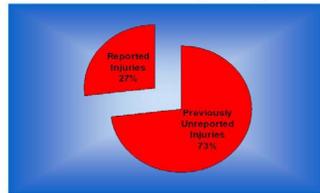


## Solution: Business case for Overhead tools Improved for Underground by Stressing Productivity

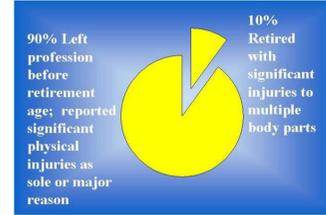
### Where are the big economies from battery tools for overhead line workers?



Review of 47 Lost Time and Light Duty MSD Line Mechanic Cases: Too Late Reporting



Line mechanics reasons for leaving line work



Payback calculation for press and cutter with higher productivity benefits (also cuts ACSR) for all crews

	Annual Benefit/worker	Annual Cost/worker	Annual Cost	Total Cost/8 yr.
BOP	x \$95		\$35,000	\$280,000
BOC	x \$167		\$79,000	\$632,000
Total	\$530	\$332	\$114,000	\$912,000

Capitalized investment payback in 8 months

1 year before /after BOP/BOC : Double the projected savings: BUT

1<sup>st</sup> aid reports TRIPLED

	Before	After	% Change	\$ Change
LW days	111 days	0	-100%	-\$44,400
RD days	110 days	0	-100%	-\$22,000
Workers comp	\$73,950	\$0	-100%	-\$73,950
PPD	336 days	0	-100%	-\$134,400
Totals	557 days	0		\$274,750
Minus tool costs				-\$110,000

Net calculated \$164,750 benefit

### Business case from projected injury reductions with battery tools= \$21,186

Data	Description	Annual costs	Annual savings (1/3)
123 WC cases from use of manual tools	Medical, indemnity	\$20,958	\$6986
LWD cases Replacements	\$50/hour, 8 hrs day	\$14,880	\$4960
RWD cases replacements	\$50/hour, 8 hrs day	\$27,720	\$9240

### The much improved business case: productivity and tool savings= \$203,036

Data	Description	Annual cost	Annual savings
Elimination manual tool purchase, repair	Crimpers and cutters	\$7893	\$2,836
Labor savings from reduced setup time and excavation size	1 hr/week setup; 1/2 hr/day excavation size	\$57,200 setup \$143,000 excavation	\$200,200



Direct buried cable battery (left) and manual tool (right)

## Case Studies: Selection and Marketing

### Ergonomics team evaluation of a battery operated reciprocating saw to cut wood, metal, plastic

- Recommended Milwaukee Electric Sawzall after testing several brands/models
- Tool eliminated all MSD upper extremity risk factors
- Placed a high priority on:
  - ability to reposition an adjustable pivot head into awkward access positions
  - tool which could be used both orbitally as well as straight on
  - Superior balance
  - Blades easily changed
  - Speed not a great factor
  - If the saw were to be used for other applications in existing locations on the ground without gloves, a D handle would be faster and more robust.

### Cordless impact drill: lessons learned" : find new markets!!!

- We Energies Ergonomics team tested several manufacturers' models
- Decided on Milwaukee Electric for performance, torque, reliability, battery life, being able to turn battery around for better balance
- Told them—we would love it if it just had a keyless chuck and a lanyard ring
- 1 week later, they delivered the prototype met with wide acceptance there and then mass produced
- ME Tools VP called to ask "how many utility field workers are there?"
- They had only been marketing to construction trades and consumers—their eyes were opened to new markets with two simple modifications because of

### FIELD PILOT TRIALS

## Lessons Learned

What kind of a business case works?

- Based on productivity, not OHS data
- Appeals to basic goals of the business
- Demonstrates success with NO BRAINER solutions that are WIN-WINS:
  - Cheap
  - Cheaper than current work practice
  - Lasts longer, more reliable
  - Saves time
  - Saves effort
- Shows need for capital investment in tools, equipment will pay off in TIME saved (less effort= less time)

**BSE** Better yet: get someone else to do it

- Border States distributor formed an engineering/supply chain/ health and safety/worker team
- Provided lunch and "did the legwork"
- Showed some new products we'd like you to test—gave samples (shown above—the gel-wrap splice instead of heat shrink)
- Review for engineering acceptability, field trials, then document time savings
- Result: >\$1 million savings up front, and manufacturers then came to We Energies for ideas and pilots 1<sup>st</sup>

## No Brainers

It costs too much money!!!

- YOU HAVE TO MAKE A BUSINESS CASE
- The best and easiest are based on time saved, not injury data
- NO BRAINERS
- Save time
- Save effort
- Eliminate/reduce actual cause of injury



No BRAINER: Blanket slings

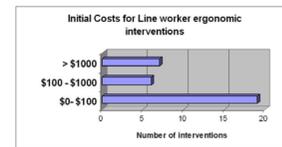
- Cheap
- Robust
- Save a lot of hand shoveling to replace spoil
- Even used to transport sand bags, etc.
- WIN WIN



NO BRAINER: automatic dead end shoe

- Installation time savings 3.75min
- Times 20,000/ yr. (purchasing)
- Minutes /60= 1250 man-hours
- Times \$38 hourly rate plus benefits = \$47,500 savings
- Doing it easier saves time and reduces injuries
- This is also a more reliable part—needs less frequent replacement
- WIN WIN

Ergonomics costs too much \$? Number vs. cost of 32 EPRI overhead line mechanic task interventions



## How to do it:

### Start at the top, but work from the bottom



- Top management support
- Reporting body committees where the mid level managers attend with top level
- Assign and hold accountable:
  - Owners
  - Action items
  - Deadlines

What must you have? DATA

- Management Champions
- Track Progress on Issues
- Report in front of VP level
- ACCOUNTABILITY
- Time and process allocated for worker input

We Energies "Ergo-nerds": Real live line mechanics who embraced the science of ergonomics



- They changed the industry
- They got other companies to change when they took the show on the road conferences, International Lineworker Shows
- Did the science—each tool was subjected to an ergonomics use analysis BEFORE trials of possible solutions
- Sold it to management
- It paid off big time—this is now the company's way of doing business: throughout the business
- Not shy of change