

**Energy & Materials Flow & Cost Tracker —**  
**Survey of Technical Assistance Providers**

Survey conducted by NEWMOA  
**Total Number of Respondents: 35**

**1. Have you found that small and medium-sized manufacturing companies in your state do an effective job with materials, water, and energy tracking in their facilities?**

<b>YES</b>	<b>NO</b>	<b>Comment</b>	<b>Skipped</b>
3 (8.8%)	20 (58.8%)	11 (32.4%)	1

**COMMENTS:**

- There's a wide array of practices; in general, I'd say no because they can operate without certain aspects significantly affecting their cost structure
- They know costs, but don't track usage
- Small companies just trying to make ends meet and don't spend resources on tracking. Estimate that half of medium size companies do track energy, water. Some air permits require recordkeeping.
- Some of the leaders do a very good job, but there needs to be and "off the shelf" computer program that can assist most others.
- Yes and No. Most small companies simply pay their utility and waste bills while many medium sized companies track these expenses.
- Do a good job with materials and when water permits are required, with water. Energy just becoming an issue in CA.
- Yes and no
- Some do very well, others (probably most) do not.
- Those w/ EMS's tend to have better metrics, and small companies usually don't have EMS's.
- The facilities pursuing Lean Manufacturing estimate these flows for the product lines they are addressing through their Lean work.
- Occasionally tracking is effective.

**2. If you answered no to question 1, why do you think that companies in your state are not doing effective materials and energy tracking (check all that apply and then skip to question number 7 below)?**

<b>Statement</b>	<b>Number Checked (30 Respondents)</b>	<b>Skipped</b>
they do not see the need	18 (60%)	5
they do tracking, but using a computer system	2 (6.7%)	
they estimate without tracking	12 (40%)	
they have not found	4 (13.3%)	

good tracking software	
<b>they think it is too much work and takes too much time</b>	27 (90%)
there are no regulatory requirements to do tracking	15 (50%)

**3. If you answered yes to question 1, how do they use the information that they track (check all that apply)?**

<b>Statement</b>	<b>Number Checked (15 Respondents)</b>	<b>Skipped</b>
improve operational efficiency and save money	11 (73.3%)	20
compare performance with other companies or facilities	2 (13.3%)	
comply with regulations	5 (33.3)	
voluntarily report as part of a corporate responsibility program	3 (20%)	
<b>reduce chemical, energy, or water use</b>	12 (80%)	
improve safety	0 (0%)	
monitor productivity or quality	7 (46.7%)	
other (please describe)	3 (20%)	

**COMMENTS (for other category):**

- Benefits observed to small and medium sized enterprises that do track (there are a few)
- Some use an Energy Management System to monitor and optimize their HVAC systems
- Financial Reports

**4. If you answered yes to question 1, have you observed small or medium-sized manufacturing companies that have computer software applications for any of the following? Check all that apply.**

<b>Statement</b>	<b>Number Checked (16 Respondents)</b>	<b>Skipped</b>
tracking purchases	9 (56.2%)	19
monitoring inventory	9 (56.2%)	
managing MSDSs	6 (37.5%)	
developing process flow diagrams or mapping	5 (31.2%)	
monitoring discharges of wastewater constituents	6 (37.5%)	
monitoring or modeling emissions of air pollutants	5 (31.2%)	
managing hazardous waste shipments	4 (25%)	
managing energy use	5 (31.2%)	
managing water use	5 (31.2%)	
tracking costs of chemical use	7 (43.8%)	
tracking emissions, releases, and waste	7 (43.8%)	
conducting P2 cost evaluation	0 (0%)	
understanding defects, rework, or scrap	7 (43.8%)	
other (please specify)	3 (13.8%)	

**COMMENTS (for other category):**

- Responses based on RCRA related paperwork during inspections
- Again these are some of the practices of those small and medium sized enterprises observed to be monitoring and tracking
- Most of the Lean work we have seen is done with pencil and sticky notes (really!)

**5. If you answered yes to question 1, have they developed their own home-grown software application for tracking?**

<b>YES</b>	<b>NO</b>	<b>Commented</b>	<b>Skipped</b>
5 (38.5%)	8 (61.5%)	0	22

**6. If you answered no to question 5, have they purchased off-the-shelf software packages for tracking, and if so what is/are the names of the packages?**

<b>Responded</b>	<b>Skipped</b>
17	18

**COMMENTS:**

- Umberto
- Umberto
- Excel
- Not generally
- No
- They just use a data base to track an EMS that is comprehensive
- Not sure
- Have not purchased software
- Don't know
- For 5 above, many simply use Excel
- Don't know
- paint supplier and mfg provided
- Some do use off-the-shelf packages, but I do not know the names
- Don't know
- I do not know the name(s)
- Motormaster, and Excel files
- I don't know

**7. Please provide advice or suggestions for the EMFACT tool developers on what data, functions, and reports you think would be valuable for your smaller and medium-sized manufacturing clients for improving their materials, energy, water, and cost tracking.**

<b>Responded</b>	<b>Skipped</b>
24	11

**COMMENTS:**

- DATA/GRAPHS; Trends over time; Year-to-year comparisons; Performance compared to targets; Trends normalized to critical business metrics (revenue, safety rates, employee #s, etc.); Benchmarking between similar facilities; Visual graphs of above to support; CSR reporting; REPORTS Customizable reporting (unclear what a specific company would want and to whom they would report--select fields, layout, etc. for state-specific requirements), with basic templates; FUNCTIONS Open Source Web-based Integrated with other regulatory reporting requirements; Log-In Screen to keep data discrete.
- It needs to be easy and quick to use and ties change to dollars saved.

- For materials, MSDS, and daily, monthly and yearly usage of each individual product would be important, and rolling averages are useful. Breaking down the materials into components (i.e., VOCs, Hazardous Air Pollutants, etc) would be helpful too.
- One screen, not several steps they would have to go through, that the company will see and fill in. That screen capture data on annual energy use, local cost per kwh per hour, water use and local cost per thousand gallons then calculates the costs. One screen, not several steps, for the top 3 materials (could be 2 or 5 but maybe 3) that calculates the difference between the amount (weight, volume, etc) used in product versus material lost as waste, scrap etc. and the overall cost of the lost material. I guess I can't emphasize enough to keep it simple with maybe two or three good measurable results they will understand from a cost savings standpoint.
- Link the data base that organizes the energy et al tracking to email or home screen to do "flag" reminders on a regular basis. For example weekly on the screen a reminder would say "monitor the compressor at location X during the this hour to determine if we can put a timer on it."
- At a minimum probably energy use (consumption, demand, power factor and \$), water use (gallons/liters per unit of production, per person), solid waste (tons solid waste generated, % recycled... by material), liquid waste (constituent concentrations, volumes), hazardous waste, permitting costs, etc.
- Benchmarking their current environmental costs of compliance based on their current materials management procedures and waste generation and management practices. Payback estimator resulting from various P2 opportunities. Use P2 measures consistent with ones developed as part of the National P2 Results System.
- Keep as simple as possible.
- Sorry can't help here.
- Utility use and cost by department or operation. Cost/benefit of recycling programs. Waste generation and disposal (solid, liquid, hazardous, and other) by specific type (e.g. paper, metal, glass, etc.)
- Very basic information on how to do tracking numbers (where/how to find information on their utility bill); industry or process-specific reasons for tracking (every 100 gallons of water used is worth how many \$\$, for example or every gallon of PERC reduced can save \$\$\$ in waste disposal fees).
- Calculators and measurement conversion charts Life cycle cost analysis. Ability to plug in options to see the effect of alternate solutions.
- Methods to track/estimate energy consumption by various utilities, such as compressed air, HVACs, cooling towers, lighting. Similar needs for water usage, such as component cleaning, cooling towers... etc.
- Data - use GRI performance measurements or equivalent ones tailored to smaller businesses. Functions - a simple tool that allows tracking of energy, water, and accounting parameters from utility bills, invoices, bank statements, etc. Materials tracking is the most difficult due to non-centralized purchasing practices and accounting systems that don't focus on categories of materials but on categories of costs. Reports - should show sequential weeks or months & include charts so changes are visible.
- Input date ranges for reports; Reports broken down by cost and emissions, reports broken down for multiple facilities of the same company.

- I have wished for one system that could organize many things in one place; making ‘tracking’ an integral part of the company, rather than an extra step. Things I would want it to do... - track sales, receiving, invoicing, waste, utilities, etc. - monitor production - employee training records - tell generators what environmental reports they need to do, including a reminder system (customizable for state / local regulations) - prepare reports that they can send directly to regulators to meet certain requirements (customizable for state / local regulations) - easily modifiable by the user to meet companies individual needs (specific things they want to track, special reports they want to generate, systems they are already using that they may be able to link or tie in, etc.) I realize that these goals are impossible to meet with one system built for many companies (and definitely not in your scope of work). However, I think it is a good goal, and a system with a simple base structure that allows customization may help some companies get there. If you haven’t already done so, I recommend selecting a variety of companies, and interviewing them about their specific needs.
- Needs to be an EASY TO USE tool that takes in data with minimal conversion effort. Reports should show at least monthly use and cost amounts for each area. I see a number of companies normalizing to production (lbs waste per unit of production) so making that easy to report out is important. See Gil Friend's very cool Sustainability metrics tracking software. Might be more elaborate than what you're looking to build, but the usability of his tool (and instant visual displays!) is what you're after.
- As cost is the most important factor to industry, especially now with energy procurement being a foremost concern, energy cost savings, water usage with variable and fixed costs directly convertible from their energy bills, and equipment inventory for life of machines- depreciation.
- Water, energy, material usage measured by process on a real-time basis could then be summarized and reported along with the cost for each, per process, on a monthly basis.
- Make it easy to learn and use. Have training available (classroom and internet) on its use. Make it a simple program that makes quick work of tracking. Market the benefits of its use and tracking.
- The EMFACT tool should fit well within an EMS, quality, or lean system.
- It is useful when firms can graphically see what they track annually on a production normalized basis (i.e. on a unit of product basis) relative to a base year. This lets them see at a glance small improvements (i.e. even a 3% or 4% change) that are not easily determined otherwise.
- I suggest making the tool very simple, or at least that is multi-level. For companies that want to do the basics can use the tool. For those that want to get much more detail, I suggest giving them that option to go further into the tool. As for reports, I suggest giving folks an idea what an effective business in that particular sector averages for materials, energy, water and cost tracking. Also, I suggest giving folks tips on what activities (e.g., pumps, seals, electronic timers, etc.) reap the best cost savings. These would be great help menu ideas.
- Keep the software simple. A good user manual is essential.

**8. If you had a free EMFACT tool to share with your small and medium-sized manufacturing clients, do you think you would make it available to them as part of the services you provide?**

<b>Responded</b>	<b>Skipped</b>
34	1

**COMMENTS:**

- Why do you develop a new tool? There are some specialized software tools with long time experiences included.
- Maybe
- Possibly. Depends how it works, if it were integrated with our services, and the tools we already have and use.
- Yes
- If it were not a commercial product (if it were an EPA or NEWMOA product) we probably could recommend it.
- Yes if it is relatively simple and easy to use.
- Yes
- Sure, though I think that using excel as the underlying program so that is easily implemented and taught is key.
- Would depend on the effectiveness and ease of use of the software. It would be nice to provide such software
- Perhaps. We're located in Vancouver, British Columbia, Canada so it would depend on how relevant it might be to local business.
- Yes
- Yes
- Yes, if it seemed well done, efficient and relatively easy for them to understand and do
- Yes, having an effective, EASY-TO-USE "tool" to track energy, water, and chemical use and costs, and waste generation/disposal data would help companies monitor their performance and track the benefits and results of implementing improvement projects.
- I would partner with a local agency to share it in a classroom or field environment and encourage them to obtain it themselves.
- We are happy to provide tools that help companies help themselves, however we would not distribute anything before trying it out and comparing it to other available calculators first. Providing too many tools can be confusing to a small business whose employees wear numerous hats.
- I do not work with many small to mid size businesses.
- Yes - however, the outreach to get them to expend the time in utilizing the software and then addressing the results is the trick.
- If we thought it would help
- Depends on how easy it is to use and how well it functions. They may not have to pay for it but it would still consume their time.
- YES

- It depends on how useful and user-friendly it was. I am always looking for good tools; if you make one, I would love to share it with my businesses!
- Definitely....if it worked.
- Possibly
- Definitely!
- Absolutely. The New Jersey Program for Manufacturing Excellence has an excellent opportunity to work with manufacturers their plants to reduce energy usage, waste, increase productivity and pollution prevention.
- I would be interested in learning about the tool, and then evaluating whether or not it would be applicable to any of the facilities that I work with.
- Yes and I would show them how to use it, as long as I was trained in its use.
- Perhaps, if it were either very simple to use or it fit with the facility's EMS, Quality, or Lean system.
- I have given firms free customized spreadsheets that track performance as described in question 7 above.
- Yes
- Yes, just as long as the tool is easy to use - see my suggestions in Question 7
- Yes
- Yes