

How to Make Measurement Matter

By Larry Christley

Recently, the U.S. EPA, the State of Tennessee, and the Southeast Recycling Development Council (SERDC) each came together to host the Measurement Matters Summit in Chattanooga, Tennessee in late February 2018. This event brought many representatives from local and state governments, national and international agencies, and several industries and trade organizations. As would be expected from a summit event, many great minds convened to work on an age-old problem – [How to Measure Our Discarded Materials](#).

The event spanned two and half days with the first day's focus on the State Measurement Program or SMP. The second day reached into EPA's "Facts and Figures" report, an evolving data system, performance benchmarking, emerging tools in measurement, and goals and measures that do not fall into the traditional measuring of tonnage. The last day was a "workday" where the skillful moderator, Dylan de Thomas, led an engaged discussion on local, state, and national direction.



By most accounts, the event was a great success and achieved many of the goals set out. The planners had 146 participants from nineteen states represented as attending, including the territory of Guam and supplemented with twenty-one LiveStream participants from many other states and several Canadian provinces. Modern technology connected and engaged each location in this great think tank to

solve measurement.

It is paraphrased and attributed to the Scottish physicist William Thomas, Lord Kelvin as saying, "What gets measured, gets managed." Let us look at this recent Summit and see how the event reached its name. The event raised many great concepts, but fell short in a specific solution for all to commit to for the future except to continue this path. The meeting was primarily foundational so most did not expect a specific solution to arise from the discussions in the short time convened. However, it is not too late to move towards a solution.

Identifying Barriers

Obviously, it is important to first survey the landscape and determine what is possible and what is not. In this survey, one must first identify the barriers to progress. Upon first note, the typical suspects raise their heads... first – double counting, differences in state requirement, and the lack of mandatory reporting. “We need effective, useable, and applicable data to prioritize efforts and measure performance.” Said Will Sagar with the Southeast Recycling Development Council “Each state has its own system with its own terms, definitions and reporting requirements.” These typical suspects appear in each discussion for this topic, as you would expect. While important, these really are straw man issues inflated beyond their current impact. What does straw man mean? When opposition exaggerates the scope of an issue beyond what it really is to make it easier to sweep aside. Because the concern to eliminate double counting problems is foremost on many state’s minds, one could expect each state or organization collecting data gives special service to this issue and eliminates the problem before becoming one in the vast majority of cases.



Another straw man issue is the differences in state reporting on how states collect and aggregate their data. When you truly look at the numbers, millions of tons for instance, how much difference does 1,000 tons of some type of obscure material really make when determining disposal? An unknown audience member raised a question to Ron Vance with the U.S. EPA during his presentation on the second day – “How many significant digits are needed?” which may get to the core of one national measurement dilemma.

How accurate is really accurate for our purposes? Do we fool ourselves to think we can measure 3,323,523.23 tons of disposal, measuring down to the accuracy of 20 pounds at a state level? What happens to the number when we talk two magnitudes greater at 330 million plus tons? Do we still maintain two decimal places? I would hope not.

At a national level, the real issue in reporting comes down to lack of participation and the ego of “my state is further along and has better processes so we are not going to participate” or “measurement just isn’t important enough for us at this time.” Those that think that there is inaccuracy in the data and are not participating are the very ones contributing to the inaccuracy of the data. The smaller the data

source the more inaccurate the data. By not submitting their data, they create a smaller sample size resulting in less accurate data both in their state and at the national level. Sagar continued, "Some states have mandatory reporting, many do not. This results in gaps in information as it is compared across state lines. The ensuing difficulty makes planning for program improvement difficult or impossible."

If accuracy is the true goal, how many states apply a Six-Sigma approach to their data collection and their data sampling? Six Sigma is a disciplined, data-driven approach and methodology for eliminating defects (driving toward six standard deviations between the mean and the nearest specification limit) in any process – from manufacturing to transactional and from product to service.¹



Sitting back and listening to the discussions, the pride of state measurement beamed through in many of the discussions. This was represented in how we set goals, define materials, and how we share the data. All good and well, but if a state is by themselves in data, one could make the argument that due to the small data sample size there are likely inaccuracies in representation. That point might fall apart with large states like California or New York where their data may equal one-third to one-half of many of the other states in tonnage combined. However, would not 50 state's data including California's be even more accurate and representative?

Solutions Proposed....

To achieve a solution five things must occur or this effort will end up an ongoing unproductive circle or be scrapped until national legislation formalizes a process usurping the state primacy. These five actions are key to the success of moving past this barrier that has stymied policy wonks for over thirty-five years and must be built on a collaboration framework.

¹ "What is Six Sigma?" by iSixSigma <https://www.isixsigma.com/new-to-six-sigma/getting-started/what-six-sigma/>

The first will likely be the hardest to achieve. Simply drop the ego. This is not a race and the winner can only be everyone or none at all. If your state is advanced, bring it to the table in a constructive manner that establishes pathways to success. Be willing to take a step back (outside your borders) and share your data. Share your leadership and methodologies.

The next needed solution will bring consistency. The consistency of knowing each state will present their data each year in the same manner and format. Each state must participate to get the accuracy of the largest data set available. When one or more states do not participate for whatever the reason, the ever-smaller data source causes participating state's aggregated data to become less accurate due to sample size. Consistency provides year over year comparison and benchmarking that states can count on to meet their comparison needs.

The thousand-pound gorilla in the room is screaming for attention when it comes to the next two solutions. The first of the two is simply raw data. Yes, raw data collected and shared at its lowest level after the state reviews for accuracy. By focusing on the raw data first and primarily, you allow the next solution – the use of technology, to do its magic. The commodities market for scrap materials has already defined and named the recovered materials and classified them, valued them, and dictate where the materials ultimately are destined. Why do we think we have to redefine market material descriptions and terms?

Raw data should be placed at the lowest level of accuracy it can be defined as available. Let us look at plastics. Let us assume a local government has 1,000 tons of natural HDPE #2 plastic. The lowest level would be just that Natural – HDPE - #2 Plastic. If the state does not have that category but only collects data as #2 Plastics, then place it in that category.

However, if the state only collects mixed recyclables data, then that is where it would be placed since that is the most “granular” level available for that reporting agency. Using technology, this issue can be immediately resolved in a few click-tap-tap of the computer and a carriage return (“Enter” for the millennials). In many ways systems like Green Halo and Emerge Knowledge's ReTRAC Connect do this very compilation.



At the national level, this can be done seamlessly aggregating raw material data at its lowest level through the market's defined materials. Yes, the market has already defined what it wants and has a name for it... why do we want to reinvent definitions and names as previously surmised. If the market pays for it, it already has a name and a specification – quit reinventing the wheel!

The last component of this solution package centers on accreditation. The establishment of this system will promote collaboration and continuous input between the many states and upward to the accrediting institution. This accrediting group will determine the measuring standard and definitions each state will follow, implement, and then attain; which can provide a national benchmark. This benchmark will define processes, materials, reporting, and a standard method to aggregate the raw reported data. Those participating will agree to comply with these accredited standards and provide consistency across the country. Accredited programs will meet the minimum QA/QC standards required by the accreditation reducing the likelihood of double counting or problematic assignment of materials to a category. Because of the rigorousness of the accreditation, participating states will be determined credible for national sharing of data on measurement. This should be the only data shared from the national level as reliable and trustworthy.

This accrediting organization should prepare standards for data describing how agencies will collect and share the raw data. The primary goal of the organization would be to collect the raw data and then to establish methods to aggregate data in an effective manner that avoids double counting and data integrity issues. The accreditation should extend from local governments (reporting), through the states (collecting data) to the national EPA Regions (reviewing and certifying). Each of these three levels should gain accreditation to extend the confidence across all levels of government.

The end game of accreditation is to establish and identify publicly those local governments, states, and EPA regions that conform to an adopted basic standard much like colleges and universities are in the education sector. If the EPA is going to cite data, it should only cite data that is accredited (credible, reliable, and trustworthy) driving other future participants to join this collaborative effort.

In Summary

Unless we step back and take a more direct approach – mandatory reporting, significant digits, the use of Six-Sigma approach, or required meeting an ASTM standard, state and local governments must come

together to breach the barrier of stalemate that has prevented the country from moving forward and sharing each's measurement data. We continue to create straw man barriers to slow the progress instead of moving forward. The Measurement Matters Summit took the first step to breach these barriers by surveying what is on the table, who the players are, and to start the dialog of defining a direction. This event should be repeated in a year or two and continue until at least until attaining a collaborative agreement on national measurement that all can adopt.

Next steps would be to first reconvene this Summit in one to two years, but focus on action steps towards standard adoption. Second, use the interim time to continue to meeting with states, advocates, and industry leaders to educate and start shifting states and local governments towards common ground such as the adoption of common methodologies, market definitions, and to participate in the free reporting option of the SMP program. Thirdly, establish a working group to setup and launch an accrediting institution or agency that will chair the materials measurement process. Once established, the organization could then work to corral the many ideas that verbally sound different but in reality are similar in process with the main differences sitting in the non-significant digits of the total.

To increase the pace of progress, the following additional steps interested parties might consider. The US EPA should establish a standard to define credible measurement. Notice this is not a mandate for states to comply with a standard but identifying a standard that will define what is credible. Next, they could also provide grants to cover the measurement implementation to the states with a scope to agree to follow the defined standards as they are developed. Lastly, state officials should look to determining the quality of their data with methods like the implementation of six-sigma approach, adoption of market definitions for materials, and use of significant digits. They should avoid the trap of using decimal places at the state level. Tie all these in together by communicating with your colleagues and do not be afraid to share or ask, "how does your state measure?" Sometimes it may be you are ahead, but you might find something you can add to your measurement repertoire that starts bringing common processes closer together.

While many of these are common sense, doing nothing only keeps us from meeting the actualization of a strong, beneficial tool to make a difference. Measurement does matter, but without sharing, it sits unused on the shelf never fully utilized.

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