

Keeping Up with Survey Respondents

Stanley R. Freedman
Energy Information Administration
1000 Independence Avenue, SW
Washington, DC 20585

Abstract

The Energy Information Administration (EIA) has taken several steps to improve its communication with survey respondents. In the past 30 years the energy industry has changed substantially because of deregulation and the restructuring of industry business practices. Even though EIA's business surveys are mandatory, we have had to change our approach to communicating with respondents to maintain our response rates and a high level of data quality. Our efforts have focused largely on pre-survey notifications of survey changes, providing multiple modes of data collection, making our surveys correspond to business record keeping practices, and insuring the confidentiality of sensitive price information.

Key Words: Survey methodology, respondents, site visits

1. Introduction

The composition and nature of respondents to energy surveys has changed dramatically over the past 30 years. This trend is expected to continue and most likely the pace of change will accelerate as the industry becomes more complex and the demand for energy grows.

The Energy Information Administration (EIA) currently has about 70 active surveys. All but two are business surveys. Even though our surveys are mandatory, we have changed our approach to communicating with respondents to maintain our response rates and a high level of data quality. EIA's efforts have focused largely on respondent site visits, pre-survey notifications of survey changes, and providing multiple modes of data collection.

This paper categorizes and describes these changes and provides an overview of how these changes have been addressed at EIA. It will conclude with some thoughts on where EIA has been and where EIA might want to go.

2. Changes in the Energy Industry

Back in the day, when gasoline was about \$1.50 a gallon, the energy industry was a fairly straightforward and working with respondents mirrored the industry. The move from a regulated energy industry to one of regulatory reform turned much of that on its head.

When EIA was formed in 1977, much of the energy industry was operating under controls. As shown in Table 1, this had several key components with implications for data collection and quality.

Table 1: Changes in the Energy Industry

| <u>Regulated</u> | <u>Regulatory Reform</u> |
|--|--|
| Prices are highly regulated | Prices on energy commodities not regulated |
| Company staff dedicated to government record keeping | Fewer dedicated staff to government record keeping |
| Vertical company integration | Integrated companies broken apart |
| Financial flows followed physical energy flows | Financial flows separate from physical flows |
| Stable frames | Volatile frames |
| One stop shopping for data | Data not available from a single source |

The most visible change was removing many of the price controls from energy commodities and the opening of markets to competition. This, as might be predicted, increased the respondents' sensitivity to providing data. Data once in the public domain and freely reported by respondents, was now competitively sensitive. This was true not only for price data, but the data about the cost of fuel for generating electricity, transportation costs for electricity and natural gas, stocks, and the characteristics of a company's energy producing equipment. In short, anything if it were revealed that might be considered to put a company at a competitive disadvantage was now looked at as sensitive.

From the point of view of EIA's interaction with respondents, of equal importance was what competition did to the staff of energy companies. Under controls, energy prices and company profits were set by state or federal regulators and were based on cost of service plus a "reasonable rate of return." Part of the cost of service was the administrative costs of running the organization. This included the employment of staff to respond to federal, state and local record keeping requirements. This included the completion of mandated energy data collection surveys. The result was that administrative staff that was once supported by the rate base was now considered overhead that did not contribute directly to the "bottom line." Companies that were under pressure to reduce costs to remain competitive looked first to these overhead positions. Staff used for government reporting were often eliminated or moved to more mission critical jobs. This turnover in staff interrupted long term relationships that EIA survey staff had established with respondents in specific companies. It had a significant impact on EIA's long time strategy of "educating respondents" as will be discussed later.

Another industry change concerned company structure. A characteristic of companies under a regulatory environment is that they tended to be vertically integrated. Production, transportation, distribution, and sale of energy were controlled within a single corporate umbrella that had record keeping systems that "spoke" to each other. While different parts of a company might fill in different parts of a single energy form, there was usually one point of contact that coordinated the response to EIA. Or, if this was not the case, at least multiple respondents within a single company knew each other and could help EIA answer questions when follow-up on surveys was required. Regulatory reform changed that structure. Companies were split apart to insure competition. Production people no longer communicated with those who were responsible for moving the energy from the point of production to distribution. As time went on there were fewer and fewer people who had a good understanding of the entire process, making data collection more difficult for EIA.

The physical flow of energy was linked to financial flows under a regulatory environment. Those who had custody of an energy commodity also had ownership. Revenue and price were linked to the physical flows. Under regulatory reform a business could be transporting an energy commodity but not own it. The transporters have no idea of the purchase or selling price, but do have a measure of the quantity delivered. To get a volume weighted price, EIA now has to go to another company, usually an energy marketer, to collect revenue and then try to reconcile the quantity and revenue information from two different sources. Two data sources and the required reconciliation complicate and lengthen EIA's business processes.

Finally, regulatory reform and the competition that accompanied it ushered in a period of mergers, acquisitions, business failures and the creation of new actors in the industry. EIA's frames, which were once relatively stable and easy to maintain, became volatile and hard to keep up to date. These changes occur frequently, rapidly, and often without much warning.

A helpful way to characterize the changes in the energy industry that affect EIA's relationship with respondents is that EIA has been moved away from the "one-stop shopping" model that was prevalent in a regulated industry environment.

3. Changes in technology – From Paper to Pixels

The technology by which EIA interacts with its respondents has changed significantly in the past 30 years. Initially, paper copies of EIA surveys were mailed to respondents and returned to EIA the same way. Results were either tabulated by hand or more likely double keypunched on Hollerith cards and read into a central mainframe computer for processing. A lot of EIA's interaction with respondents in those days was "Where is your survey form?" and the expression "it's in the mail" became popular. It was not until weeks after a survey was submitted that a respondent ever heard from EIA about its submission.

A variation of the mail back of paper forms is the use of fax to return surveys to EIA. It is a small technological leap, but one that proved useful to respondents as they approached filing dead lines.

The first big technological change came with the appearance of desktop computers both at EIA and at its respondents' facilities. EIA began to develop software that could be installed on personal computers, and when opened, an electronic representation of a survey form would appear. The first such effort was the Petroleum Data Reporting Option (PEDRO). The respondent would fill in the form and electronically transfer the file to EIA. This system also ushered in the first application of edits performed by respondents prior to data submission. One drawback to this technology is that software must be installed on the respondent's computer. Given the varieties of hardware configurations and versions of operating systems, installing software can sometimes be hazardous. It requires a help desk at EIA to work with respondents to iron out problems when they occur. It has also become increasingly common that respondents' information technology departments do not want to install "outside" software on their networked computers. It increases the opportunities for computer crashes and the introduction of viruses into their systems.

Variations of this response principle are fillable PDF files, and spreadsheets. They are created to look like printed forms. The respondent downloads them from a website, fills them in and returns them to EIA, either by email or secure file transfer. They lack respondent side edits but have the advantage of having little or no impact on a respondent's desktop.

The final technological advance to discuss here is the use of the Internet to collect survey data. In the late 1990's EIA began discussing putting surveys on the Internet using browser technology. The events of September 11, 2001 accelerated the process. When anthrax spores were discovered in the mail rooms of government offices, all correspondence coming into EIA was first sent to a facility in the Midwest to be irradiated. Survey forms came into the agency with a soft brown patina, crispy, and very, very late. In addition, companies no longer felt comfortable receiving mail from the government. On Oct 8, 2001, just 27 days after 9/11, EIA deployed its first survey on the Internet, the State Heating Oil and Propane Program soliciting heating oil and propane prices. Respondents logged on to an EIA server, opened up their browsers, completed the survey and securely submitted the data to EIA over the Internet. The system had a number of key features:

- Respondents were able to interrupt their sessions and return to the form without losing what they had entered.
- Respondents could print copies of their forms and save their submissions on their own desktops.
- The form took full advantage of the power of the computer for navigation and data entry.
- Context sensitive help was available to respondents.
- Respondents received confirmation of successful data submissions.

- Data were transmitted electronically and securely to EIA and eliminated the need for data keying.
- Respondent side edits were incorporated into the system along with the ability of respondents to provide electronic explanations of data that did not pass edit.

EIA was always been interested in reducing the steps involved in data capture and processing and making the whole process easier for its respondents. This system accomplished that very well. But more importantly, EIA continued to push more of the burden of editing to respondents. The Internet coupled with the ability to query historical data bases hopefully, from EIA's point of view, would produce error free data from respondents and eliminate the need for respondent contact at all.

The respondents liked the new Internet system because it made it eliminated paper, facilitated data entry, and they didn't need special software to submit data. Most importantly, the Internet system reduced the number of phone calls they received from EIA. EIA survey managers liked the new system because it eliminated data keying, increased timeliness of respondent submission, and importantly, reduced the number of phone calls EIA had to make to survey respondents. The trend was to reduce the amount Agency – respondent contact. The system was so popular that at this point about 50% of EIA's survey respondents are completing surveys over the Internet.

The remainder of this paper will address the intersection of these two forces – industry change with technology change and the impact it has had on our respondents and EIA's data quality.

4. Respondent Contact Strategies

4.1 Training the respondents – The Personal Touch

This is EIA's oldest form of respondent contact and one that is beginning to fade into distant memory. Survey forms were developed by EIA industry experts and vetted with industry groups. EIA first contacted respondents when EIA had questions came up about completed surveys. While this may be an oversimplification of the process, it is a fairly accurate depiction of the model.

In the early cycles of a survey the contact involved detailed discussions with respondents as to what EIA was trying to collect, how concepts were operationalized, and why initial survey responses did not seem to make sense. It was a dialog between EIA and its respondents. EIA educated respondents about what EIA needed to collect from them and the respondents gave EIA valuable feedback about its data collection processes. This educational process usually took several survey cycles and substantial amounts of time on the phone.

The process was successful in EIA's for several reasons. First, in the early days EIA had nearly twice the resources in staff and contractors that it has today. Second, in the days prior regulatory reform of the industry, respondent populations were very stable. EIA survey staff talked with the same respondent staff for years. Professional relationships existed between the data collectors and data providers. The training was repeated and reinforced, especially on EIA's monthly surveys. Also, the same individuals completing monthly surveys usually completed EIA's annual surveys on the same energy area.

This strategy does not work as well today, not because the personal touch is ineffective, but because EIA resources have diminished and the industry has changed significantly in the past 30 years. There is substantial turnover among respondents within a company. It is not unusual for a survey contact to change three or four over the course of a year. What is even worse is when reporting is contracted out to 3rd parties. These 3rd parties, generally accounting firms are not familiar with the details of the operations of the energy companies for whom they are reporting. This complicates follow-up and does not allow EIA to get the details of company operations that generate the data.

4.2 Pre-survey Notifications

EIA's most common form of pre-survey notification is publication of intent to make survey changes in the Federal Register. This is required of all federal agencies every time they propose an information collection of any sort. EIA takes the requirement further than required and actually makes copies of the proposed new

or changed forms available to the public at the first public notice. While this is an important part of pre-notification, it is probably has the least impact of all pre-survey methods. Federal Register Notices are generally only “noticed” by trade associations other stakeholders. These groups are a crucial part of the process for EIA, but an intermediary between EIA and the actual establishments that are completing the survey. Surveys may not be sent to the public or to establishments until approved by the Office of Management and Budget and they are convinced that the survey methodology is sound and the concerns of potential respondents have been addressed.

Respondents are notified directly, usually by letter or email, when surveys are close to final form. This gives them the chance to comment directly to EIA about the changes. This direct communication is more effective than the public notices, as EIA gets more feedback, but does not open a real dialog with respondents. It has the advantage of reaching effected survey respondents

4.3 Respondent Site Visits

In the past few years EIA has taken another approach to working with respondents, informing them about survey changes and new data requirements. EIA staff visit respondents at their business location to test if surveys with actual respondents

One version of visits is pre-survey design visits. Pre-survey design visits are meetings with respondents or potential respondents conducted at their place of business. Visits are conducted at the very beginning of the survey design/redesign process are meant to educate EIA about the industry segment being surveyed.

These visits are designed to understand how the industry operates, what kinds of data are generally kept by respondents, and whether these data correspond to the concepts that EIA is interested in measuring. Respondents are asked for their input to determine what concepts are feasible to measure, how they would measure these concepts, and if EIA’s survey design process is far enough along what kinds of data they keeping related to EIA’s data requirements.

These visits have been very successful and yield a lot of useful information used in the forms design process. They are the best way EIA has found so far of communicating with respondents. They have the added benefit over other tools of providing quality “face time” with respondents, understanding their problems, and making them feel genuinely appreciated for their efforts. Of course, the number of companies EIA can reach this way is very limited and the costs in time and resources are high.

Traditional cognitive testing of surveys is another form of respondent site visit. They focus on a respondent’s ability to understand concepts, answer questions, follow survey instructions, and navigate through the form. The technique can be either a concurrent think-aloud protocol or a retrospective interview, but the emphasis is on the respondent’s interaction with the survey instrument. Business surveys have another important aspect to them not covered in traditional cognitive interviewing. A person is responding not for themselves, but as the representative of a company. They are a “middle-man” between the questionnaire and a company’s records. As such, it is important for them to understand the correspondence between what EIA is asking, and a company’s business records.

Record keeping studies are currently a popular form of respondent contact at EIA. Visiting a respondent’s place of business to review plans for a new survey or major changes in an existing survey can be very useful in improving the final design of a questionnaire. These visits generally involve discussions with a potential respondent on the following topics:

- Does the respondent keep the data that the agency wants?
- How closely does the establishment’s record keeping correspond to the required survey data?
- How compatible are these record keeping systems with the agency’s collection instruments?
- How difficult will it be to provide the data in the time period needed by the agency?

They are most often used on existing survey to validate data and correct reporting problems. It is not unusual for EIA to conduct between 15 and 30 of these type visits to correct reporting problems. They are important for business surveys because of the obvious reliance on record keeping practices in establishment surveys.

4.4 Multiple Modes of Responding

EIA is required by law and for practical reason to allow respondents to have multiple means of responding to EIA. While it is true that the Federal government has placed great emphasis on moving to electronic data submission, there are still some respondents who can not respond electronically. Although only a very small percentage of EIA's respondents still use the mail to return paper forms, EIA still allows those types of submissions. More common is the respondents' use of fax to return printed forms, which tends to be used by smaller companies.

The preferred method for both EIA and its respondents is electronic submission. The three main modes are:

- Fillable spreadsheets or PDF files
- Software installed on a respondents computer
- Browser based web surveys.

There are three very helpful features to this software. First it eliminates the paper flow between EIA and its respondents. Second, it facilitates processing at EIA, by eliminating manual keying of data. Third, it introduces respondent side data editing.

A definite downside to software installed on a respondent's computer is that not all companies would not allow external software installed on their computers.

As mentioned, browser based Internet forms are the preferred mode of collection and the direction in which the agency is currently moving. It simplifies and automates data collection and requires

5. Where We Have Come From

It was been interesting to watch how are interaction with respondents has changed over the past 30 years and how it has been influenced by changes in technology available to survey methodologists and respondents alike. If the trend continues, EIA may collect data from company postings on You Tube and Face Book. One thing is very clear – technology has created a much more impersonal relationship between our data suppliers and EIA than existed in our early years. It has improved efficiency within the agency and made respondents happier because they don't have to deal with multiple phone calls and emails to answer questions. These are all good things from both sides of the aisle. Because EIA surveys are almost exclusively mandatory it has not adversely effected are response rates.

What are there any negative consequences, if any? I believe we no longer know and understand our respondents and their business processes as well as we used to. Their record keeping systems are more of a mystery to us then ever before. And I wonder if we have as good a handle on what the respondents are reporting to us as we once did. Finally, when there is a major data collection problem with a survey we are not as well equipped to deal with it as we once were.

6. New Directions

We clearly cannot turn the clock back, nor would we want to. The gains in efficiency and cost saving are too great to even consider such a move. In fact, one thing EIA respondents have been asking for is the ability to submit batch data files to EIA and skip the data entry process completely. Push a button at the end of the month and their information securely makes its way across cyber space to EIA's servers. EIA

will likely begin to consider moving in this direction, especially if there is a way to insure that respondent side editing remains in place. EIA is thinking about how to do this.

The problem with is that the more automated EIA respondent contacts are, the more likely EIA is to fall behind the curve of understanding respondent record keeping and industry changes. EIA has seen this as a problem when new surveys are developed or major changes are introduced to existing surveys. One thing EIA has done is to develop cross walks between old and revised surveys. Another is to develop lists of Frequently Asked Questions. Clearly improvements in initial survey design for the Internet are needed as well.

One interesting idea that has been offered up, but not implemented are brief instructional videos for respondents when there are significant changes to surveys. This would be particularly helpful when new concepts are introduced into a data collection. These could be imbedded in the questionnaire or instructions. These would be available in much the same way as the technology used in help functions of popular tax software packages. They would provide one additional level of explanation and could include illustrative examples.

On-line pre-recorded web seminars for new surveys or major revisions could also prove useful for educating respondents. One thing that EIA methodologists have learned in their site visits is that when a respondent understands what prompted a question change or has an understanding of the concepts that EIA is trying to measure, they are better able to supply the needed data.

These are all possible strategies for EIA to explore in the future. As EIA moves forward we hope to put some of these things into place resources permitting. Whatever strategies we pursue that must do nothing to separate us further from our respondents.