

Planning and Integration of EIA Survey Programs

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Abstract: One of the challenges facing the Energy Information Administration (EIA) is planning and integrating survey programs. One initiative in 2006 was to utilize recommendations from survey and program evaluations to redesign and integrate surveys in the Petroleum Marketing Program.

This paper provides information on conditions and motives for using these recommendations to redesign survey instruments and instructions and information concerning the results of redesigning the Petroleum Marketing Program. This paper also summarizes lessons learned, including the primary reasons recommendations were not adopted by survey managers. As a result of this project insights concerning the importance of achieving balance through trade-offs among cost, timeliness, and quality.

Keywords: Evaluation, Quality, Establishment surveys

1. Introduction

In 2006 recommendations from an external evaluation were used to redesign the survey instruments, instructions, and mailout materials for the 2007 Petroleum Marketing Program.

These recommendations identified areas of improvement intended to enhance relevancy, accuracy, and consistency and to reduce survey costs. Other recommendations were intended to improve consistency across the surveys or to improve consistency between the instruments and instructions. Still other recommendations were intended to make the surveys and associated energy program more transparent to survey respondents and EIA customers.

As a result of this initiative we learned a few lessons regarding the use of survey evaluations to redesign survey instruments, including the importance of achieving balance between cost, timeliness and quality when redesigning survey instruments.

This paper will address the following four questions:

1. What are the challenges of planning and integrating EIA survey programs?
2. How were these survey evaluations used to plan and redesign the 2007 Petroleum Marketing Program?
3. What were the results of this initiative?
4. What lessons were learned along the way?

2. What are the challenges of planning and integrating EIA survey programs?

EIA, like other federal statistical agencies, faces many challenges in planning and conducting survey programs. Some of the challenges are unique to conditions at EIA.

EIA annually conducts over 70 surveys and typically several surveys are integrated into each of these energy programs. Most of our surveys are mandatory and all (except one) of EIA surveys are establishment surveys.

A typical energy program produces several publications, integrating data from several surveys. These surveys may collect data for different purpose, may collect data from different target population, or may collect data for different reporting period. Some of the surveys are quick “turn-around” weekly surveys and other surveys are detailed monthly or annual surveys.

Most surveys are integrated into one of the following energy programs: Coal, Electric power, Petroleum marketing, Petroleum supply, Natural gas, Nuclear, etc. These and other differences among surveys make it challenging to integrate surveys into a single program.

EIA energy programs routinely undergo OMB clearance every three years; typically no additional funds are available to the survey managers for redesigning the survey instrument. Some surveys have remained relatively stable over time while other surveys – notable those in the electric power and natural gas programs – have undergone significant changes due to industry restructuring.

3. How were these survey evaluations used to plan and redesigning the 2007 Petroleum Marketing Program?

Evaluations were conducted of surveys in the Petroleum Marketing Program using the survey and program evaluation template. The templates contained the following categories: Survey (or Program) Name, Brief Description of the Survey (or Program), Survey (or Program) Objectives, Target Population, Sampling Frame, Sample Design, Instrument (or Program) Design, Data Collection, Editing and Imputation, Weighting, Data Analysis, Products, and Dissemination, and Summary of Findings.

Table 1: 2007 Petroleum Marketing Program

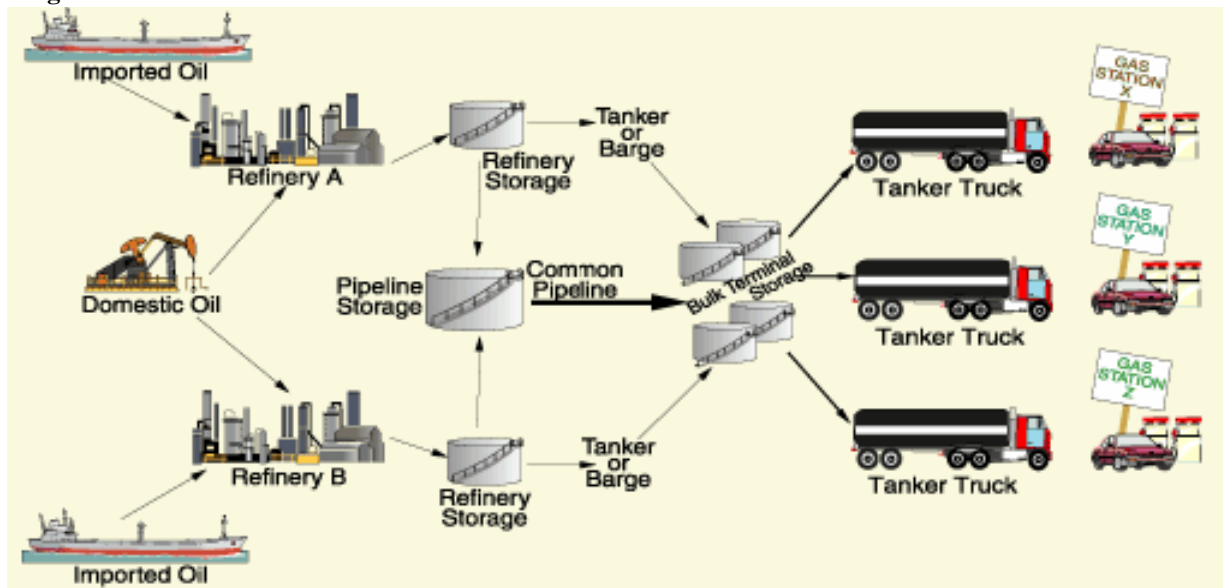
EIA#	Survey Title	Frequency	Mode	Frame	Units
14	Refiners' Monthly Cost Report	Monthly	Mixed	68	Barrels
182	Domestic Crude Oil First Purchase Report	Monthly	Mixed	90	Barrels
782a	Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report	Monthly	Mixed	100	Gallons
782b	Resellers'/Retailers' Monthly Petroleum Product Sales Report"	Monthly	Mixed	2,000	Gallons
782c	Monthly Report of Prime Supplier Sales of Petroleum Products Sold for Local Consumption	Monthly	Mixed	170	Gallons
821	Annual Fuel Oil and Kerosene Sales Report	Annually	Mixed	4,334	Gallons
856	Monthly Foreign Crude Oil Acquisition Report	Monthly	Mixed	40	Gallons
863	Petroleum Product Sales Identification Survey	Quadrennially	Mixed	24,400	Gallons
877	Winter Heating Fuels Telephone Survey	Weekly	Telephone	925	Gallons
878	Motor Gasoline Price Survey	Weekly	Telephone	1,200	Gallons
888	On-Highway Diesel Fuel Price Survey	Weekly	Telephone	350	Gallons

An external evaluator utilized these templates to provide recommendations on each survey and on the Petroleum Marketing Program. The recommendations from two components - Instrument Design and Data Collection - of the survey evaluations were used to redesign the survey instruments and instructions of the 2007 Petroleum Marketing Program.

Dimensions important in planning and integrating surveys in the Petroleum Marketing Program are identified in Table 1. These dimensions include: frequency of collection, mode of data collection, frame size and units of analysis.

Diagram 1 is a simplified schematic of the petroleum flow from imports and domestic reserves to refineries, from the refineries through the pipeline, barges or tankers to bulk terminal storage, and from the bulk terminals along to tanker trucks that deliver gasoline to retailers, resellers and outlets where consumers purchase gasoline.

Diagram 1: Petroleum Flow



The 2007 Petroleum Marketing Program consists of multiple frames – importers, refineries, retailers, resellers and outlets that market gasoline and other petroleum products.

The Petroleum Marketing surveys collect data throughout the petroleum energy flow. Each survey captures data for different dimensions: specific geographic coverage, temporal dimension, and/or petroleum products.

EIA disseminates the quantity and price of petroleum products in weekly, monthly and annual reports that are presented on EIA’s website. For example the annual *Fuel Oil and Kerosene Sales Report* provides State-level sales by end-use by sectors for kerosene, distillate fuel oil, and residual fuel oil. End-use sector volumes are published for residential, commercial, industrial, farm, and all other end-use sectors.

There are a number of challenges in collecting data on sales of petroleum products. Collecting price and quantity of petroleum products is difficult due to the “fungible” nature of petroleum product. For example, kerosene can be used as kerojet.

Another challenge is measuring State-level sales. This concept is easy for respondents to understand, although in some cases it is difficult for respondents who sell in neighboring States to provide these data due to limitations of their financial records.

Redesigning surveys in the Petroleum Marketing Program involved the following procedures. An external consultant initially conducted a survey evaluation of each survey and offered recommendations intended to improve the survey design, to enhance data quality, and to enhance efficiency in the survey and statistical procedures.

Each recommendation was discussed with the survey manager. The survey managers each decided whether or not to adopt the proposed recommendations. Many of the proposed recommendations were adopted; others were not. In a few cases the survey manager suggested the proposed recommendation be reconsidered in the future, especially those recommendations which involved modifications to the processing system.

The survey manager’s decision of whether or not to adopt a recommendation often involved trade-offs to balance issues of timeliness, cost, and quality. The survey methodologist incorporated those recommendations adopted by the survey managers. This redesign process drew upon the skills and experience of the consultant, the survey methodologist, and the survey managers.

4. What were the results of this initiative?

The results of this initiative are summarized in Table 2 and discussed in more detail below.

Table 2: Instruments Redesign Results
<i>Redesigned Surveys</i>
<ul style="list-style-type: none"> • Enhancements to survey instruments • Consistency across surveys • Consistency among instrument and instructions
<i>Enhanced Data Quality</i>
<ul style="list-style-type: none"> • Relevance • Accuracy
<i>Enhanced Efficiency</i>
<ul style="list-style-type: none"> • Reduce respondent burden • Reduce costs or time

Enhancement to survey Instruments design: Enhancements to the survey instrument design included modifications to layout/navigation, contents, and statistical methods (see Table 3). The layout/navigation (specifically header and footers, font size and type, and table layout) of some surveys was modified in order to give the surveys in the Petroleum Marketing Program a similar appearance.

Table 3: Instruments Redesign Issues
<i>Layout/Navigation</i>
<ul style="list-style-type: none"> • Header/Footer • Font size/type • Table layout
<i>Contents</i>
<ul style="list-style-type: none"> • Petroleum Products and Streams • Question-wording/response categories • Clarification and corrections to instrument
<i>Statistical Methods</i>
<ul style="list-style-type: none"> • Units • Rounding • Resubmissions

Consistency across surveys: For the 2007 program, the survey managers collectively considered trade-offs to balance consistency across the surveys with unique aspects of their individual survey. For example, one recommendation was to collect quantity on all the surveys in the same units, namely gallons. This proposed recommendation was rejected for Form EIA-14 because respondents kept their records on acquisition of crude oil in barrels.

Consistency among instrument and instructions: The instructions of some surveys were modified to enhance consistency in format and content across the program. The format for the survey instructions consisted of:

1. Questions?
2. Purpose
3. Who must submit?
4. How to submit?
5. Where to submit?
6. How to access instruments and instructions?
7. How to complete the survey instruments?
8. Provisions regarding confidentiality of information
9. Sanctions
10. Filing instruments with Federal government and estimated respondent burden
11. Definitions
12. State Abbreviations

The exception to this format involved the three weekly telephone surveys which excluded: “How to access instruments and instructions.” It was regarded as unnecessary to provide instructions on how to access

instruments and instructions for a telephone survey since these respondents do not complete an instrument.

The following three components of the instructions contained the same content for all surveys in the Petroleum Marketing Program:

- How to access instruments and instructions;
- Sanctions; and
- Filing instruments with Federal government.

Contents of the remaining components of the instructions differed from one survey to another. These differences are due to differences among the surveys: purpose, frame, reporting period, frequency, and modes of data collection, due date, type of sales data collected, estimated respondent burden, and pledge of confidentiality. Differences among surveys with regard to frame, frequency and mode of data collection are provided in Table 1.

Redesigning the instructions for each survey involved achieving a balance between seeking consistency across the survey program and uniqueness of each survey.

Recommendations were adopted to ensure that both the administrative and the legal information were consistent across the survey instruments, instructions and letters. For example, information on who to contact is identical on the survey instrument, instructions and letters for the same survey. Providing accurate information and a consistent message is critical for making the survey procedures transparent to respondents and for collecting comparable data.

Enhanced Data Quality: Preparation for the 2007 Petroleum Marketing Program involved considering whether or not to introduce new petroleum products and to delete existing petroleum product categories. The decision to introduce new petroleum products (e.g., ultra low sulfur diesel) and to delete select petroleum products was intended to enhance relevancy and based on foreseeable changes in the industry.

Enhanced Efficiency: A few proposed recommendations were offered to improve efficiency of the survey program. These recommendations included: (a) discontinuing (or merging) survey instruments; (b) sending pre-notification letter to new respondents and to respondents to introduce modifications to survey instruments; (c) changing or adding mode of collection; and (d) introducing statistical or survey methods to reduce respondent burden.

One recommendation intended to result in cost-savings and which was not adopted was the proposal to switch the mode of data collection for the three weekly surveys. This recommendation was not adopted due to the initial funds needed to redesign the data collection and processing system.

5. What lessons were learned along the way?

The lessons learned can be grouped into two categories: how to use evaluations to redesign and integrate EIA survey programs and reasons proposed recommendations were not adopted.

How to use evaluations to redesign and integrate EIA survey programs: The first and most important lesson learned is that the survey and program evaluations were an effective and efficient tool for redesign survey instruments and instructions. The evaluations were effective in identifying areas for improvement. Furthermore the approach which optimized the strengths of the survey managers and survey methodology skills to redesign the surveys was extremely efficient.

In addition, communication and collaboration between survey managers in a program office and survey methodologist in research office is critical to success of project. This was essential since the survey methodologist provided options and the survey managers chose whether or not to adopt recommendations based on these options.

Reasons recommendations were not adopted: In making the decision of whether or not to adopt a recommendation, survey managers often considered trade-offs between cost, timeliness, and quality or trade-offs between consistency across the survey program and individual survey requirements.

The most common reasons given for not adopting recommendations included: (a) lack of resources; (b) limitations of existing survey processing system; (c) desire to support time series data through continuation of existing survey or statistical methodology; and (d) recommendations was not applicable or inappropriate.

In a few cases recommendations that were deemed inappropriate by survey managers occurred when the external evaluator received insufficient or outdated information regarding either an individual survey or changes to the program. Even these unintended discoveries were useful since they identified potential need to update existing survey documentation.

6. Achieving balance

Achieving balance is essential when redesigning and integrating EIA survey programs. When redesigning surveys the decision to retain the status quo or adopt a proposed change involves achieving balance among the following trade-offs:

- Balancing benefits of consistency across the survey program and unique aspects of each survey.
- Balance among timeliness, cost, and quality.
- Balance between continuity of time-series data and need to modify data series due to changes in the energy industry.

EIA will continue to seek to achieve balance in planning and integration of survey programs. We will benefit in future endeavors from the lessons learned during redesign of the 2007 Petroleum Marketing Program.

References

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