

Follow-up on Frames Team Activities

Presenter: Howard Bradsher-Fredrick

April 5, 2005

I. Introduction

The EIA Strategic Plan calls for efficiency improvements in EIA's operations. In particular, the Strategic Information Technology Subgroup has been chartering teams to study the role information technology can play in affecting increased efficiencies. As part of this effort, this Subgroup has chartered several "frames teams" during the course of the past year. These teams have been charged with well-defined objectives.

The first frames team was charged with providing recommendations concerning activities in the frames area that will lead EIA toward saving resources, facilitating commonality in data and software, improving processes, thus resulting in frames and frame information that can more readily be shared within EIA. This team met from March 2004 to May 2004 and developed a set of six recommendations.

The second frames team met from August 2004 to January 2005. The primary focus of its activities was to assess each unique EIA survey frame for "sufficiency." The third incarnation of the frames team began meeting in February 2005. It is specifically charged with following up on the recommendations put forward by the first incarnation of the team.

This paper will discuss the objectives, methodologies, results, and future directions of these frames teams.

II. The First Frames Team

Objectives

An inter-office team¹ was chartered to identify efficiencies EIA can pursue regarding frames and the computer systems that support frames. This "Frames Team" was chartered by the Strategic Information Technology Subgroup to serve for approximately two months. During this time, the team was charged with "providing recommendations concerning activities in the frames area that will lead EIA toward saving resources, facilitating more commonality in data and software, improving processes, and resulting in frames that can be easily shared within EIA." The team was initially notified of its

¹ The team members are Betty Barlow (OIT), Joe Conklin (OOG), Carol French (OOG), Marianne Holly (OOG), Tom Leckey (CNEAF), Bill Liggett (CNEAF), Tom Murphy (CNEAF), TC Swann (CNEAF), Paula Weir (OOG), Grace Sutherland (SMG/Note taker), Howard Bradsher-Fredrick (SMG/Facilitator)

objectives on March 3, 2004 and requested to prepare a priority-ordered list of recommendations by May 1, 2004. The team met on a weekly basis with frequent “off-line” activities being assigned in order to meet the deadline.

Methodology

The team began its work by identifying a number of topics around which to arrive at a set of recommendations. Developing such a list was thought to be useful for the purposes of an organized discussion. These topics are the following:

- Communication and commonality among offices,
- Standards/Best practices/Frames update procedures,
- Maintenance/Support/Development/Design Flexibility (System),
- Quality/Performance Measurement/Timeliness,
- Reorganization/Office to deal specifically with frames.

One of these topics was then discussed each week with recommendations developed through this discussion. In some cases this discussion led in the direction of needing to consult and study related documents from EIA or other statistical agencies. These documents included the following:

- EIA Strategic Plan 2004-2008,
- EIA Standard 2002-05 (Frames development and Maintenance),
- EIA Standard 2002-11 (Data Quality Measures),
- EIA Standard 2002-11 (Supplemental Materials, Additional Suggested Data Quality Measures, and periodic Quality Reviews),
- Census Bureau Guideline: Quality Checklist for Census Bureau Products ((Part IV. Develop and Maintain Survey Sampling Frame(s) (Survey and Census Products Only)) (Part V. Select Survey Sample (Survey Products Only))),
- Federal Committee on Statistical Methodology Statistical Working Paper No. 17.

Recommendations

The team agreed upon a set of recommendations for EIA to adopt in order to achieve the original team objectives. These are as follows:

1. Complete and maintain a descriptive inventory of EIA frames including necessary information, such as:
 - File names
 - Elements and descriptions
 - Last update
 - Frequency of update

- Surveys used
 - Frame contact name
 - Confidentiality information
2. Conduct quarterly meetings within and among affected or interested offices; these offices could include OIAF, EMEU, and SMG in addition to OOG, CNEAF, and OIT. The purposes of these meetings are the following:
- Review frames issues with respect to new surveys, and prior to clearance, review established surveys
 - Discuss any activity affecting frames
 - Discuss and become aware of new tools (e.g., IT)
 - Discuss major frames updates (sharing information and/or costs on survey anchors (non-IT tools))
 - Recommend subcommittees for conducting special projects related to frames
 - Review existing frames
 - Promote commonality of frames and collaboration among offices
 - Ensure the confidentiality of the frames' data is preserved in data sharing.

The office representatives who would attend these quarterly meetings should be provided with sufficient resources in order to fulfill the mission of the team. Participation as a team member should be more than merely attending meetings; it will be necessary for team members to prepare pertinent information and identify important issues in advance of the quarterly meetings. Representatives would probably be the frames managers from the affected offices and should be familiar and up-to-date with all frames activities and direction in their office.

3. Develop best practices for system maintenance, system support, and flexibility of system design regarding frames databases including:
- Develop an architecture that uses a data dictionary with common terms, has software built around common modules, and has a data model that is generic and simple
 - Employ a lifecycle development model
 - Involve major user groups in all stages of the life cycle
 - Promote sharing of frame information for statistical purposes among Federal agencies
 - Use commercial off-the-shelf software where possible (e.g., software to locate and match records)
 - Strive for cost effective development and maintenance, taking into account the costs and effects on the survey and the data
 - Strive toward maximum platform independence of application and the database

- Perform system's reliability and load testing prior to implementation in the development process
 - Build in data and metadata/control data integrity edits and edit messages
 - Develop an intuitive, user-friendly interface
 - Build in capability to locate or match records beyond exact matches
 - Implement standardization of frequent words and abbreviations
4. Develop IT mechanisms as needed to copy/view other frames across EIA.
 5. Hold ad hoc meetings for new EIA surveys.

When new surveys are to be developed, hold timely meetings in order to determine if there are particular frames issues that need to be discussed. In particular, frames information from other EIA offices may be available and/or modification of an existing frame might provide information needed by another office.

6. Replace EIA Standard 2002-05 (Frames Maintenance and Development) with the revised version.

III. Second Frames Team

Objectives

As part of EIA's performance measurement effort, a team was formed by the EIA Strategic Planning Team to evaluate EIA's survey frames. The American Statistical Association – Energy Committee also recommended that EIA evaluate its survey frames.

The team was composed of representatives from various EIA offices. All offices that actually conduct surveys had a representative on the team². The team met on a weekly basis from August 2004 to January 2005.

An EIA-wide effort to systematically assess all EIA survey frames was probably never attempted prior to this effort. Thus, prior efforts were not readily available to serve as models for this activity.

The second frames team was charged with achieving the following objectives:

² The team members are as follows: Betty Barlow (OIT), Philip Budzik (OIAF), Tom Leckey (CNEAF), Mark Schipper (EMEU), and Casey Tischner (OOG). Grace Sutherland (SMG) provided support in assembling information tables and facilitated the meetings when the assigned facilitator was unavailable. Howard Bradsher-Fredrick (SMG) served as facilitator and also provided support in gathering information.

- To identify surveys having unique frames in EIA and surveys using subsets of those frames,
- To compile information regarding each frame to enable the team to make a judgment regarding the frames “sufficiency” or “insufficiency” relative to each survey’s stated purposes and goals,
- To render an informed judgment regarding each frame’s sufficiency or insufficiency,
- To make recommendations for improvement or identify challenges with respect to each frame,
- To fulfill these objectives within a reasonable time period.

Methodology

Prior to the first meeting of the team, a significant amount of background material for each frame was compiled. This provided the basis for the team getting started. The team perceived its primary function as two-fold: to determine sufficiency and thus provide input into the performance measurement stated in the EIA strategic plan³ and to make recommendations on improving all frames. In addition to the recommendations, challenges are also stated; these are defined as difficulties presently faced by survey managers with respect to frame quality. Also, any frame comparison activities presently being conducted in conjunction with another agency (e.g., frame comparisons being conducted in cooperation with the Census Bureau) were also stated.

Because survey frame “sufficiency” is not well defined, the team initially agreed upon the criteria to be employed for judging frame sufficiency. These criteria are:

- The existence of a systematic approach toward maintaining the frame,
- The volatility of the frame over time,
- The existence, availability and use of other EIA and third-party comparable frame listings (especially comprehensive lists),
- The existence of balancing items and the magnitude and stability of the balancing item over time,
- The relative concentration of volumes in a relatively few respondents,
- Changes in the industry, legislation, regulations, and other exogenous considerations,
- An independent assessment by the survey manager of the quality of the frame.

While no single one of these criteria led to any specific judgment, these all played a role in leading to a determination of sufficiency or insufficiency. In deciding upon

³ The relevant portion of the EIA 2004-2008 Strategic Plan is related to Goal #1, elements and performance measures: For relevancy and reliability of the EIA information program, the performance measure is the percentage of EIA survey frames with sufficient coverage to produce reliable supply, demand and price statistics.

sufficiency for any given frame, the team considered whether or not the frame was sufficient for key purposes (i.e., relative to the survey's purposes and goals) and not necessarily sufficient for all potential purposes.

While some survey frame information had already been collected from an earlier information collection effort on frames, the team deemed it necessary to obtain further information from survey managers. This was accomplished using various modes of contact: the e-mail system, telephone and personal interviews. Thus, survey managers were often contacted more than once for specific information. Moreover, the team often required further clarification concerning information provided by survey managers. This necessitated further contacts with survey managers in order to obtain the requisite clarification information.

The basic information collected by SMG⁴ prior to the formation of the team is shown in Appendix A. The following additional survey information and quantitative data (Appendices B – D) were collected by the team. The appendices are the following:

- Appendix A: Initial Basic Frame Information,
- Appendix B: Stability (or Volatility of the Frame),
- Appendix C: Corresponding Useful Listings of Frame Units or Available Survey Frames,
- Appendix D: Balancing Item, Concentration of Volume, and Other.

Results

The team reviewed 34 EIA survey frames; the results of the team's assessment are shown in Appendix A. As was previously noted, some of these frames serve as a "master frame" for more than one survey; these frames and the associated surveys are designated in Appendix A.

Five of the frames reviewed were regarded as not being within the team's purview for evaluation. This was generally due to the fact that the survey frame was perceived by the team to be a subset of another EIA frame or the frame was being managed by an organization other than EIA. Frame definitions and frame size designations were found to be very subjective among team members and survey managers.

Of the remaining 29 that were reviewed for sufficiency, 25 were deemed sufficient for key purposes, while 4 were either thought to be either "Insufficient" or given a "Don't Know" by the team at the present time. The rationale for the insufficiency determination were primarily due to concerns about mechanisms being in place to ensure future frame quality, or due to expected changes in the structure of the energy market or, due to changes in laws and regulations. However, merely because a frame is deemed sufficient does not indicate that there is no room for improvement or there aren't challenges ahead

⁴ Grace Sutherland was at the forefront of this earlier effort.

to be addressed. These recommendations for improvement and challenges are also listed in the table.

Future Frame Evaluations

The team believes that this was a useful exercise and an exercise EIA should conduct once every 3 or 4 years. Since EIA management began showing particular concern regarding the quality of EIA survey frames a few years ago, survey managers appear to have been engaged in various activities with the goal of improving their survey frames. It appears as though the quality of survey frames might have improved considerably due to these recent activities.

Therefore, EIA's decision to focus more management attention and resources to the development of better survey frames appears to have had the desired effect of improving the survey frames. In order to continue and extend these improvements, the team recommends that EIA maintain its management focus by continuing to assign this area a high priority.

Although the team was only assigned the task of determining survey frame sufficiency, the team noticed that there was considerable variation among the surveys regarding the degree to which changes to the survey frame were actively monitored, documented and archived. For example, some survey managers were unable to provide precise data regarding recent frame turnover (i.e., the number of new respondents added, deleted, or merged into other entities, etc.). The formal tracking of survey frame membership might have long-term benefits both in terms of maintaining management focus and in terms of providing a baseline regarding a "normal" historical turnover rate vis-à-vis future turnover rates.

In critiquing the overall effort, processes and decisions made by the team, the team worked well together with processes that functioned well. The team recommends, however, that when a similar team is chartered for a similar future effort that the team members should be broadened to include representatives from all fuel groups rather than merely office representatives. Thus, for example, representatives from the coal division and natural gas division should be added. This would expand the team's knowledge base regarding a particular industry's practices and idiosyncrasies.

IV. Third Frames Team

Introduction

An inter-office team⁵ was chartered to follow-up on the recommendations made by the first incarnation of the Frames Team. These recommendations were made in a report to the Frames Team Champions (dated 5/5/2004). The first Frames Team was charged with identifying efficiencies EIA can pursue regarding frames and the computer systems that support frames. Specifically, the team was charged with “providing recommendations concerning activities in the frames area that will lead EIA toward saving resources, facilitating more commonality in data and software, improving processes, and resulting in frames that can be easily shared within EIA.”

The first activity of this team was to draw-up a team charter⁶. This activity was completed and the charter was sent to the Champions on March 8, 2005. The next task of the team was to review the recommendations of the first frames team and to decide whether or not we agree that all of the recommendations are worth pursuing at this time and to prioritize each recommendation. For each recommendation, a brief summary of the likely resource commitment is also listed.

The third incarnation of the frames team began meeting in February 2005. The following are a list of team objectives:

- To work toward a long-term goal of enhanced commonality in IT.
- To identify opportunities to share frame information among offices.
- During 2005 the primary tasks of the team will be to develop plans for addressing the highest priority challenges identified during the 2004 frames assessment exercise.
- To manage and monitor the quality of EIA frames, recommend needed enhancements to frames that have been judged to be deficient or, alternatively, recommend that a survey be discontinued or that result tables be provided with appropriate caveats.
- To recommend further studies needed to evaluate frames sufficiency.
- To prepare preliminary recommendations for consideration in the Spring 2005 EIA Senior Staff planning session.
- To prepare updated recommendations to the Fall 2005 EIA Senior Staff plans for the “Frame Sufficiency” performance measure.

The team has developed a team charter and has completed an interim report, making recommendations concerning the recommendations advanced by the first frames team. Additionally, the team has begun meeting with staff members of other Federal statistical agencies in order to determine how other peer agencies contend with similar problems, particularly problems with frame sharing among internal offices.

⁵ The team members are Joe Conklin (OOG), Mark Friedman (OIT), William Gifford (EMEU), Marianne Holly (OOG), Tom Schmitz (CNEAF), Grace Sutherland (SMG, Ass’t to the Chair), Howard Bradsher-Fredrick (SMG, Chair)

⁶ A team’s charter normally includes information about the following: background of the problem at issue, objectives, expected deliverables/deadlines, costs and benefits, resources available, performance measures, a list of team champions and a list of team members.

Recommendations

The following is a list of the recommendations of the third frames team. This section describes the recommendation of the third frames team on each of the recommendations of the first frames team.

The team agreed that EIA should follow through with Recommendation #1 from the first frames team. This should also be granted a high priority due to the fact that it will take a period of time to actually collect this data and information⁷.

Descriptive Inventory of EIA Frames (High Priority)

1. *Complete and maintain a descriptive inventory of EIA frames including necessary information, such as:*
 - *File names*
 - *Elements and descriptions*
 - *Last update*
 - *Frequency of update*
 - *Surveys used*
 - *Frame contact name*
 - *Confidentiality information*

The team noted that it is necessary for the team to define important terms in order to obtain the proper information. Terms of particular interest are “frame” and “elements” (of the frame). The team may also need to further refine the complete list of items to be requested from the frames managers.

Should this task be undertaken, the resource commitment would probably include the following: one meeting of the entire frames team to decide upon a list of elements that would constitute a “descriptive inventory of EIA frames,” a commitment on the part of survey/frames managers in the EIA offices to take the time to complete the template/questionnaire, a commitment on the part of and team members to send-out and follow-up on receiving the responses, a commitment on the part of the team’s chair to organize the responses in a suitable format, and finally, a team meeting to review the responses.

Quarterly Meetings to Discuss Frames & Ad Hoc Meetings to Discuss New Frames (High Priority)

⁷ The original recommendations of the first frames team are listed in italics.

The team agreed that EIA should follow through with Recommendation #2 from the first frames team. Also, Recommendation #5 should be folded into this recommendation. After combining these recommendations, the new recommendation should read as follows:

2. *Conduct quarterly meetings (or special meetings as new surveys are developed) within and among affected or interested offices; these offices could include OIAF, EMEU, and SMG in addition to OOG, CNEAF, and OIT. The purposes of these meetings are the following:*
 - *Review frames issues with respect to new surveys, and prior to clearance, review established surveys*
 - *Discuss any activity affecting frames*
 - *Discuss and become aware of new tools (e.g., IT)*
 - *Discuss major frames updates (sharing information and/or costs on survey anchors (non-IT tools))*
 - *Recommend subcommittees for conducting special projects related to frames*
 - *Review existing frames*
 - *Promote commonality of frames and collaboration among offices*
 - *Ensure the confidentiality of the frames' data is preserved in data sharing.*

The office representatives who would attend these quarterly meetings should be provided with sufficient resources in order to fulfill the mission of the team. Participation as a team member should be more than merely attending meetings; it will be necessary for team members to prepare pertinent information and identify important issues in advance of the quarterly meetings. Representatives would probably be the frames managers from the affected offices and should be familiar and up-to-date with all frames activities and direction in their office.

These meetings should have an agreed upon agenda prior to their taking place. The size of the committee should be limited to at most 12 participants and preferably fewer. Individual offices should decide who should attend. OIT needs to be included in these meetings so that possible IT solutions to frame sharing, confidentiality and commonality issues can be effectively discussed.

It was noted that of the above listing of objectives and tasks, the objective of promoting commonality of frames and collaboration among offices should be emphasized. It might also be useful for the first meeting to include a discussion involving the definition of the term "frame." Since this term and other related terms are difficult to define, it is important that a common vocabulary of key technical terms be adopted for these meetings.

Should this task be undertaken, in addition to the preparation and meeting time commitment on the part of attendees, as discussed in the recommendation above, there will be preparation time on the part of someone (possibly the frame team chair) to

organize the meeting. This task will include preparing an agenda, reserving a room, and contacting meeting participants.

Adopting “Best Practices” with respect to System Development/Maintenance/Support (Medium Priority)

The team decided to revise this recommendation, including folding in the 4th recommendation, as follows:

3. *[Develop] best practices for system maintenance, system support, and flexibility of system design regarding frames databases including:*
 - a. *Develop an architecture that uses a data dictionary with common terms, has software built around common modules, and has a data model that is generic and simple*
 - b. *For new systems or major overhauls of present systems, employ a lifecycle development model (i.e., system requirements, specifications, model development, log maintenance changes, etc.)*
 - c. *Involve major user groups in all stages of the life cycle*
 - d. *Use commercial off-the-shelf software where possible (e.g., software to locate and match records)*
 - e. *Strive for cost effective development and maintenance, taking into account the costs and effects on the survey and the data*
 - f. *Strive toward maximum platform independence of application and the database (Compatibility is desirable and EIA does not want to be dependent on particular hardware.)*
 - g. *Perform system’s reliability and load testing prior to implementation in the development process*
 - h. *Develop an intuitive, user-friendly interface*
 - i. *Develop IT mechanisms as needed to copy/view other frames across EIA.*

The team discussed this recommendation at considerable length. It was noted that this team is probably not going to recommend any major system development projects, but that these system practices should be employed for minor system development or major system changes to already existing systems (should the team recommend any).

Should this task be undertaken, the team will need to meet several times and possibly do some research apart from the group meetings. The representative from OIT will probably need to take the lead on this effort.

Ability to Copy/View Frames

4. *Develop IT mechanisms as needed to copy/view other frames across EIA.*

The team decided that this recommendation should be included in Recommendation #3. This has been done (as shown in the last bullet above).

Ad Hoc Meetings to Discuss New Frames

5. *Hold ad hoc meetings for new EIA surveys.*

When new surveys are to be developed, hold timely meetings in order to determine if there are particular frames issues that need to be discussed. In particular, frames information from other EIA offices may be available and/or modification of an existing frame might provide information needed by another office.

The team decided that this recommendation should be included in Recommendation #2. It has now been included in that recommendation (See above.)

Frames Maintenance and Development Standard (Medium Priority)

6. *Replace EIA Standard 2002-05 (Frames Maintenance and Development) with the revised version in Attachment A.*

The team will review the original standard and its proposed replacement and make a recommendation.

Should this task be undertaken, it will be necessary for the team to meet once in order to discuss the new and old standards and arrive at consensus on whether the new standard or a revised new standard should be adopted.

Frame Documentation (High Priority)

7. *The team recommends that the existing standards on frame documentation should be reviewed and updated, if necessary. Also, a template for the minimum basic frame documentation should be developed.*

This is a new recommendation, but one the team thinks is important to study.

Should this task be undertaken, it will be necessary to conduct some research apart from the actual team meetings. The chair and his assistant will need to locate any extant EIA frames documentation standards and any other necessary background material in preparation for team meetings on the subject.

Researching Frames Problems at Peer Federal Agencies

It should be noted that the members of the team plan to meet with representatives from peer Federal statistical agencies to discover how these agencies contend with similar frames sharing issues. Indeed several team members have already met with two separate

groups in the Census Bureau and have shared their experiences with the entire frames team.

V. Questions for the Committee

- Considering the results of the second frames team, are there any suggestions as to how to proceed in determining sufficiency of frames in the future?
- Are there any comments regarding the third frames team's recommendations?

Attachment A

ENERGY INFORMATION ADMINISTRATION STANDARD 2005-?

Title: Frames Development and Maintenance

Superseded Version: Standard 2002-05

Purpose: To promote a systematic process for the development and maintenance of frames and for monitoring of frames quality while enabling the sharing of frame information across EIA surveys.

Applicability: All EIA surveys.

Required Actions for Creating New Frames:

When a new frame is needed for a data program, a frame's construction plan should be developed and implemented. The plan should document the following descriptions:

- Data items necessary to support unique and efficient identification of elements in the frame
- Data items necessary for sampling purposes such as
 - (a) any area listing information or results that may be used
 - (b) measures of size or other sampling attributes
 - (c) information pertaining to how frame elements are organized into plants, sites, facilities, plants, outlets, subsidiaries, and similar structures
 - (d) important industrial, technical, legal, or historical relationships between or within frame elements
- Identification, description, and evaluation of any sources, including any or all parts of an already existing frame, that may be used to construct a new frame
- Any manual or automated matching/merging/unduplication methods used to reconcile independent sources into a coherent non-duplicative frame or to find elements existing on the frame
- Clear and comprehensive definitions of terms and codes
- The extent to which the new frame is expected to reflect the population of interest
- How the quality of the new frame will be evaluated (under/over coverage, accuracy of sampling and identification information, timeliness, etc)
- How other important checks, counts, totals, or statistics will be calculated

- How often or under what triggers the new frame will be updated, the methods that will be used, and a projected schedule and resource budget for this task (see Required Actions for Maintaining and Updating Existing Frames)
- The frame's major applications and frequency of use.
- The performance measures that will be produced to measure and monitor the frame with respect to quality (see Standard 2002-11 and supplement to 2002-11)

Required Actions for Maintaining and Updating Existing Frames:

Plans for maintaining and updating existing frames must be documented, implemented, and revised as needed. Maintenance includes

- Detecting and adding of new elements (births)
- Revising for changes in the ownership, name, address, contact, etc. of an element
- Incorporating suggestions to improve frame quality
- Incorporating cross reference information between surveys or survey systems
- Indicating whether frame elements are in or out of scope
- Indicating whether frame elements are active or inactive, or other status distinctions.
- Recording the date of changes to the content of an element
- Resolving conflicts between frame elements and other sources of information

Updates may occur as information is discovered or according to the predetermined schedule as described in the frame plan. Updates on a predetermined schedule should be comprehensive searches that examine more current information sources and incorporate it into the frame. Plans to update under a predetermined schedule should document:

- the frequency of updates or the triggers for updates
- how sources of information will be evaluated and used
- how updates will be incorporated into all appropriate files, mailing lists, and other survey control forms or listings
- how the updated frame will be evaluated for quality (under/over coverage, accuracy of sampling and identification information, what performance measures will be produced to measure and monitor with respect to quality)
- a projected schedule and resource budget for an update

To ensure that the most recent information is retained, the record for each member of the frame must have appropriate transactional variables, including at least the most current status of the element known and the last date the record was modified. Before each major update of a frame, the current version must be preserved in a manner that allows its recreation with minimal time and effort. Versions of frames so preserved must retain in accordance with each survey office's record retention schedule:

- all respondents whether active or inactive
- all information about an individual frame member, including all transactional and descriptive data needed for sampling or survey control.

If the record retention schedule allows for the eventual deletion of inactive respondents, the survey office should first consult with the users of the frame to insure deletion results in no major negative impact. Deletion should proceed after the survey office documents there are no unacceptable consequences in terms of future frame updates, conflicting survey files, or in any other terms the users of the frame may put forth.

Related Information: None

Approval Date:

Appendix A: Summary of Frames Team Assessment of Frames Sufficiency

Program: Petroleum Supply

Form Number: EIA-810 and EIA-820

Form Name: Monthly and Annual Refinery Report

Data Type: Supply

Number of Units⁸: 151

Sufficient: Yes

Rationale: SMG did considerable work with the Census Bureau to reconcile frames differences. There were definitional differences between EIA and Census Bureau “refineries.” This appeared to be due to the consumption of “still gas,” and the definition of such facilities. This provided an opportunity for Census to clean their frame, but EIA’s frame appeared to be in reasonably good shape.

Recommendations for Improvement: None

Challenges: MECS and EIA-810/820 staff should continue to work together to improve data consistency.⁹

Form Number: EIA-811

Form Name: Monthly Bulk Terminal Report

Data Type: Supply

Number of Units: 248

Sufficient: Yes

Rationale: Survey respondents relatively easy to identify due to their small number, large facility size, and relative industry stability. Good cross-checking¹⁰ opportunities with outside sources.

Recommendations for Improvement: Close monitoring may be required because state legislation on MTBE use and the number of gasoline fuel blenders (300) is likely to keep the survey frame list in flux over the next several years.

Form Number: EIA-812

Form Name: Monthly Product Pipeline Report

Data Type: Supply

Number of Units: 83

Sufficient: Yes

⁸ Different survey managers may have a different perception of unit counts, but the team and the SMG staff members who collected data attempted to be as consistent as possible.

⁹ Recommendation of Tom Lorenz at ASA-Energy Committee Meeting (October 2004).

¹⁰ Cross-checking involves comparing one list of frame elements (usually the frame of interest) with an independently-collected list of frame elements.

Rationale: Survey respondents relatively easy to identify due to their small number and large facility size. Good cross checking opportunities with outside sources.

Recommendations for Improvement: None

Form Number: EIA-813

Form Name: Monthly Crude Oil Report

Data Type: Supply

Number of Units: 147

Sufficient: Yes

Rationale: Good cross checking opportunities with other petroleum industry survey frame lists.

Recommendations for Improvement: None

Form Number: EIA-814

Form Name: Monthly Imports Report

Data Type: Supply

Number of Units: 175

Sufficient: Yes

Rationale: EIA can compare its imports frame listing with Customs and Census listings on a company-by-company basis though matching companies between frames (or listings) presents some difficulties. However, OOG appears to work hard on this to maintain a sufficient frame.

Recommendations for Improvement: Continue to develop techniques to better conduct cross checks.

Form Number: EIA-815

Form Name: Monthly Terminal Blenders Report

Data Type: Supply

Number of Units: 227

Sufficient: Don't Know/No

Rationale: It is extremely difficult to identify new motor gasoline blenders. This difficulty is compounded by the fact that this is a new survey. Terminals can begin blending operations without readily providing notice. EIA probably is presently missing a number of blenders in its frame.

Recommendations for Improvement: EIA understands that the EPA is in the process of requiring blenders to obtain a license in order to conduct blending operations. Once the EPA has established a viable list, EIA should attempt to make use of the list for frame maintenance purposes.

Form Number: EIA-816

Form Name: Monthly Natural Gas Liquids Report

Data Type: Supply

Number of Units: 422

Sufficient: Yes

Rationale: The 816 data is compared with the LPG Almanac. This is a more volatile segment of the industry so more monitoring may be needed than for the other

petroleum survey frames. The potential survey frame volatility is a result of decline in regional field production, which has resulted in mergers, closure of facilities, etc.

Recommendations for Improvement: None

Form Number: EIA-817

Form Name: Monthly Tanker and Barge Movement Report

Data Type: Supply

Number of Units: 42

Sufficient: Yes

Rationale: The frame is composed almost entirely of large oil companies. These companies provide the information needed on movement since they maintain custody of the oil.

Recommendations for Improvement: None

Form Number: EIA-819

Form Name: Monthly Oxygenate Report

Data Type: Supply

Number of Units: 138

Sufficient: Yes

Rationale: EIA is doing a reasonably good job at the present time. However, it may become increasingly difficult to identify small ethanol producers in the future (e.g., farmer cooperatives). Also, imports are becoming more important. Potential legislation at the state level promoting alternative transportation fuel could also play a role in increasing the number of producers.

Recommendations for Improvement: Considering the increase in the potential number of small producers, be sure to allocate sufficient resources to maintain a high level of vigilance in identifying new producers in a variety of states. EIA should also monitor oxygenate imports which could be volatile over time.

Program: Petroleum Marketing

Form Number: EIA-863

Form Name: Petroleum Product Sales Identification Survey

Data Type: Demand and Price

Number of Units: 24,400

Sufficient: Yes

Rationale: While there are approximately 100 sources of frame information, the various survey samples that use the frame continually aid in the frame maintenance. However, there is deterioration of the frame during the course of its four-year run between major frame updates.

Recommendations for Improvement: If the major frame update were done more often than every four years, the quality of the frame could improve.

Form Number: EIA-856

Form Name: Monthly Foreign Crude Oil Acquisition Report

Data Type: Price

Number of Units: 37

Sufficient: Not within our purview

Rationale: This frame really borrows frame elements from the EIA-810 and EIA-814. Thus, according to the team's definition of a frame, the EIA-856 does not qualify.

Recommendations for Improvement: None.

Challenges: The survey manager believes that resources should be used to provide for better sharing of data among surveys so that she could more easily identify respondents for the EIA-856. She is employing a cut-off sample survey based on frame information from the EIA-814, 810, and 14.

Program: Natural Gas

Form Number: EIA-176,

Form Name: Annual Report of Natural and Supplemental Gas Supply and Disposition

Data Type: Supply, Demand Price

Number of Units: 1,944

Sufficient: Yes

Rationale: This frame appears to be basically good for adequately surveying natural gas volumes and, additionally, prices for estimating commercial and residential consumers. However, the EIA-176 historically being a survey of companies holding custody of natural gas did not permit easy evolution toward survey coverage of players not involved with custody (e.g., marketers). Marketers are likely to be difficult to keep track of over time; marketers enter and leave the market frequently.

Recommendations for Improvement: While it is acknowledged that resources are very limited with respect to developing and implementing new surveys, in order to adequately handle the industrial price data problem, new players in the natural gas arena will need to be surveyed. One possible action to quantify the adequacy of the EIA-176 to publish industrial prices is to formalize a review of manufacturing prices between the EIA-176 and EIA's quadrennial survey of manufacturers (EIA-846). Note: The latest survey results for the EIA-846 are available for the 2002 year.

Form Number: EIA-910

Form Name: Monthly Natural Gas Marketers Survey

Data Type: Price

Number of Units: 154

Sufficient: Don't Know

Rationale: This is a new survey that is in a state of flux. New states are being added as consumer choice programs come into existence. Some states have comprehensive lists of marketers due to the requirement for marketers to register with the states. However, in other states multiple partial lists make it difficult to be sure that all marketers are being

surveyed. However, it appears as though EIA is doing a good job with developing procedures to ensure as good frame quality as possible given the circumstances.

Future Challenges: It will remain a future challenge to identify new marketers as they come into existence. This will be particularly true as new states are added to EIA's frame (e.g., six new states are in the process of presently being added to the survey frame).

Form Number: EIA-895

Form Name: Monthly Quantity and Value of Natural Gas Report

Data Type: Price/Supply

Number of Units: 32

Sufficient: Not Applicable.

Rationale: The 895 is a subset of the EIA-23 frame. The EIA-895 actually surveys state agencies (a very well-known set of respondents), but the state agencies are actually surveying a subset of the respondents to the EIA-23.

Recommendations for Improvement: None

Program: Oil and Gas Reserves

Form Number: EIA-23

Form Name: Annual Survey of Domestic Oil and Gas Reserves

Data Type: Miscellaneous

Number of Units: 21,005

Sufficient: Yes

Rationale: EIA conducts good cross checking on this frame. Survey data are within 1% of Petroleum Supply Annual data and 2% of the Natural Gas Annual data. Although small operators are problematic (Cat. III), they constitute a small proportion of the total reported petroleum reserves.

Recommendations for Improvement: None

Form Number: EIA-64A

Form Name: Annual Report of the Origin of Natural Gas Liquids Production

Data Type: Supply

Number of Units: 527

Sufficient: Yes

Rationale: This frame has been fairly stable over time and is likely to continue to be stable. Routine procedures exist for updating the frame, using petroleum industry publications.

Recommendations for Improvement: None

Program: Alternative Fuels Program

Form Number: EIA-886

Form Name: Annual Survey of Alternative Fueled Vehicle Suppliers and Users

Data Type: Miscellaneous

Number of Units: 2,491

Sufficient: No

Rationale: It is very difficult to conduct this survey of alternative fuel vehicles (AFVs), particularly in an environment characterized by scarce resources. Some AFV fleets owned by local governments and private (non-utility) companies are missed in the frame. This accounts for 60% - 70% of the total AFVs. A number of sources of information have been investigated with the result being that either the information source is not workable or overly expensive.

Recommendations for Improvement: 1. It might be useful to again have a look at trying to get at alternative transportation fuel (ATF) consumption if these are the data of real interest. 2. Resources could be devoted to developing a frame of local governments to augment the existing frame. 3. The on-going processing of survey frame information is lacking; perhaps resources could be devoted in order to have a dedicated FTE.

Form Number: EIA-63A

Form Name: Annual Solar Thermal Collector Manufacturers Survey

Data Type: Misc.

Number of Units: 57

Sufficient: Yes

Rationale: There are a very small number of companies in a relatively stable frame. Cross checking this frame with other industry listings insures frame sufficiency.

Recommendations for Improvement: Remain aware of changes in state legislation affecting renewable portfolio standards.

Form Number: EIA-63B

Form Name: Annual Photovoltaic Module/Cell Manufacturers Survey

Data Type: Misc.

Number of Units: 43

Sufficient: Yes

Rationale: There are a very small number of companies in a relatively stable frame. Cross checking this frame with other industry listings insures frame sufficiency. Changes in the new form should improve the quality of the import data.

Recommendations for Improvement: Remain aware of changes in state legislation affecting renewable portfolio standards.

Form Number: EIA-902

Form Name: Annual Geothermal Heat Pump Manufacturers Survey

Data Type: Miscellaneous

Number of Units: 14

Sufficient: Yes

Rationale: There are a very small number of firms in the industry with a high concentration of volume in a few firms. A consortium of geothermal organizations exists that maintains a list of all firms in the field (i.e., maintains a frame identical to EIA's).

Recommendations for Improvement: None

Program: Electric Power

Form Number: EIA-860

Form Name: Annual Electric Generator Report

Data Type: Supply

Number of Units: 2,450

Sufficient: Yes

Rationale: This is a survey frame in which a large proportion of the generating capacity is concentrated in the largest companies. These producers are predominantly the fossil fuel facilities or very well known hydroelectric and nuclear plants. However, there are many small producers. The problem area in the frame is in locating small renewable facilities. Alternative sources of such listings are available and used for updating purposes.

Recommendations for Improvement: Since identifying additions to the frame of renewable plants is problematic and resource intensive, all of the offices in EIA that collect pertinent frame information should share that information with EIA-860 staff members. This procedure should be formalized in order to ensure its proper functioning.

Form Number: EIA- 411

Form Name: Coordinated Bulk Power Supply Program Report

Data Type: Supply

Number of Units: 10

Sufficient: Not Applicable

Rationale: This frame is maintained by the North American Electricity Reliability Council (NERC) jointly with each of the regional councils. EIA obtains a single submission from NERC, representing the aggregate response of the 10 regional councils.

Recommendations for Improvement: None

Form Number: EIA-861

Form Name: Annual Electric Power Industry Report

Data Type: Price, Demand, Supply

Number of Units: 3,400

Sufficient: Yes

Rationale: The frame is stable. Routine procedures are in place to maintain the frame. The identification of power marketers may be the biggest challenge. Power marketers are registered with FERC, but many of them do not actually market power. The balancing item is working well with effective balance in recent years. Because of the heavy concentration of volume in a few facilities in the frame, survey resources are disproportionately expended on relatively small frame units.

Recommendations for Improvement: Deregulated power sales are potentially going to cause survey frame problems. This segment of the frame should be monitored closely in future years.

PROGRAM: FINANCIAL REPORTING SYSTEM

Form Number: EIA-28

Form Name: Financial Reporting System (FRS)

Data Type: Misc.

Number of Units: 27

Sufficient: Not Applicable

Rationale: This survey does not involve a frame. According to the DOE Organization Act, it appears as though the EIA administrator is charged with identifying major energy-producing companies that are involved in the energy industry so that the information collected from such companies provide a statistically accurate profile of each line of commerce in the energy industry.

Recommendations for Improvement: None

PROGRAM: COAL

Form Number: EIA-3

Form Name: Quarterly Coal Consumption and Quality Report, Manufacturing Plants

Data Type: Demand

Number of Units: 562

Sufficient: Don't Know

Rationale: The balancing item stability and its relatively low proportion of total volume (i.e., 1%) indicates that frame sufficiency is probably good. However, the lack of a systematized approach toward frame updates could lead to problems if a large number of plants begin using coal. The synfuel plants that were recently added to the frame are probably all-inclusive. A recent cross-check conducted by CNEAF against an independent frame showed no differences. The survey manager seems to have mechanisms in place to remain on top of the synfuel frame situation.

Recommendations for Improvement: Frame quality is dependent upon a systematic approach toward frame updates. It appears that this frame is lacking such an approach; appropriate action should be taken to remedy this. The Bureau of the Census is presently evaluating this frame.

Form Number: EIA-5

Form Name: Quarterly Coal Consumption and Quality Report, Coke Plants

Data Type: Demand

Number of Units: 24

Sufficient: Yes

Rationale: There are a very limited and stable number of coke plants being surveyed. Also, a newsletter exists which provides comprehensive information for updating this survey frame.

Recommendations for Improvement: The Bureau of the Census is presently evaluating this frame.

Form Number: EIA-6A

Form Name: Coal Distribution Report – Annual

Data Type: Supply, Demand

Number of Units: 1,000

Sufficient: Yes

Rationale: Similar to the EIA-7A, this frame is anchored to the Mining Safety and Health Adm. (MSHA) frame. The form also collects the name and address of the other party for sales and purchases, thus permitting the identification of new distributors. Because the frame is continually updated by a regulatory agency and thus is essentially self-maintaining, this frame should have no problems in maintaining its frame sufficiency in the future.

Recommendations for Improvement: None

Form Number: EIA-7A

Form Name: Coal Production Report

Data Type: Supply

Number of Units: 1,850

Sufficient: Yes

Rationale: This frame is quite good due to the fact that the Mining Safety and Health Adm. (MSHA) requires mines to register and obtain an identification number prior to production. The primary difficulty is that some small mining facilities fall in and out of scope because their annual tonnage varies around the tonnage and manpower threshold levels as specified by the survey's design. However, this issue can be addressed by keeping these small parties on the frame list and letting them self-select in any particular year as to whether their current status requires their submission of a survey form.

Recommendations for Improvement: None.

PROGRAM: URANIUM

Form Number: EIA-851

Form Name: Domestic Uranium Production Report

Data Type: Supply

Number of Units: 28

Sufficient: Yes

Rationale: This frame is highly concentrated in a few facilities with only a small frame. Also, the location of uranium mines is well known.

Recommendations for Improvement: None

Form Number: EIA-858

Form Name: Uranium Industry Annual Survey

Data Type: Supply

Number of Units: 70

Sufficient: Yes

Rationale: There are relatively few facilities and these are well known. New companies and mergers can be readily monitored. Inventories and transactions are used on a continuous basis to serve as a balance for the purposes of checking and making corrections.

Recommendations for Improvement: None

PROGRAM: CONSUMPTION SURVEYS

Form Number: EIA-871A/I

Form Name: Commercial Buildings Energy Consumption Survey (CBECS)

Data Type: Demand/Price

Frame Size: Not Applicable because a complete address listing of commercial buildings does not exist in either public or private sources.

Sufficient: Yes

Rationale: A list of commercial buildings is not available. Hence, the Commercial Building Energy Consumption Survey is not sampled from a complete list frame, but uses a state-of-the-art statistical “area sampling” approach. The survey is well documented in terms of describing its frame and sampling methodologies.

Recommendations for Improvement: None

Challenges: The appropriate selection of individual buildings in multi-building facilities (e.g., university campuses, hospital complexes) represents a challenge in the area sampling procedure.

Form Number: EIA-457A/G

Form Name: Residential Energy Consumption Survey (RECS)

Data Type: Demand/Price

Frame Size: Not Applicable, because EIA does not have access to a complete address listing of residential buildings for sampling purposes.

Sufficient: Yes

Rationale: The Residential Energy Consumption Survey is not a list frame, but uses a state-of-the-art statistical “area sampling.” The survey is well documented in terms of describing its frame and sampling methodologies.

Recommendations for Improvement: Monitor/review progress of the United States Postal Service’s address listing as a source to develop or use directly as a sampling frame.

Form Number: EIA-846(A,B,C)

Form Name: Manufacturing Energy Consumption Survey (MECS)

Data Type: Demand/Price

Frame Size: 237,000

Sufficient: Yes

Rationale: The Bureau of the Census maintains an establishment-level list frame and conducts the survey on behalf of EIA, under an interagency agreement. The list frame is updated yearly from IRS records, an annual Company Organization Survey conducted by the Census, and every 5 years in years ending in "2" or "7" by the Census' Census of Manufacturers. **Note:** Title 13 of the U.S. Code prevents EIA from taking possession of the list frame. Sworn Census agents and Census employees can view/analyze data onsite at the Census Bureau, but release of any data is subject to Title 13 compliance. Currently, EIA maintains sworn census status for the 2-member MECS team (Survey Manager - Bob Adler).

Recommendations for Improvement: None

Challenges: MECS and EIA-810/820 staff should continue to work together to improve data consistency.

PROGRAM: VOLUNTARY REPORTING OF GREENHOUSE GASES

Form Number: EIA-1605B AND EIA-1605EZ

Form Name: Voluntary Reporting of Greenhouse Gases

Data Type: Misc.

Number of Respondents in 2002: 228

Sufficient: Not Applicable

Rationale: Because the reporting is voluntary, the list of respondents is not a survey list frame. Note: The program is undergoing policy changes expected to be implemented by the end of 2005.

Recommendations for Improvement: None

