

**PLAN FOR
OFFICE OF ECONOMICS AND ANALYTICS (OEA)
RECOMMENDATIONS AND REPORT TO CHAIRMAN AJIT PAI
FEDERAL COMMUNICATIONS COMMISSION**

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TABLE OF CONTENTS

I. EXECUTIVE SUMMARY3

II. INTRODUCTION AND OBJECTIVES.....3

III. OVERVIEW OF RESEARCH AND GUIDING PRINCIPLES.....4

 A. RESEARCH TEAM AND PROCESS4

 B. WHAT GUIDED OUR RESEARCH.....4

 C. WHAT WE LEARNED.....5

IV. THE DETAILS OF THE RECOMMENDED PLAN FOR AN OFFICE OF ECONOMICS
AND ANALYTICS.....6

 A. STRUCTURE6

 1. ECONOMIC ANALYSIS DIVISION9

 2. INDUSTRY ANALYSIS DIVISION9

 3. AUCTIONS DIVISION.....10

 4. DATA DIVISION11

 5. BUREAUS AND DIVISIONS OUTSIDE OF OEA13

 B. AUTHORITIES14

 C. PRACTICES.....15

 1. IMPROVING OPERATIONS15

 2. BUILDING NORMS/CULTURE.....17

V. REASONING BEHIND THE RECOMMENDED PLAN19

APPENDIX I.....21

APPENDIX II24

APPENDIX III.....26

APPENDIX IV.....27

I. EXECUTIVE SUMMARY

Chairman Pai has observed that while the Federal Communications Commission (FCC) has a proud tradition of addressing important long-range policy questions and using economic analysis to improve policy outcomes, the agency has not *consistently* applied such analysis. This report presents a recommended plan for reforms at the FCC—encompassing organizational structures, authorities, and practices—to better incorporate economic analysis as well as data management as part of the agency’s regular operation. The centerpiece of this plan is a new Office of Economics and Analytics (OEA), with delegated authority designed to better integrate economic analysis into the FCC’s decision-making. The plan also identifies a set of new practices intended to make such integration common across the agency. The goal of these reforms is to consistently apply economics to produce better policy, to the ultimate benefit of the American public.

“Everyone in Washington talks about picking the low-hanging fruit. No one talks about planting a tree. That’s what’s needed.”
William Kovacic (former Acting Chairman, Federal Trade Commission)

II. INTRODUCTION AND OBJECTIVES

As directed by Congress, the Federal Communications Commission (FCC) establishes policies and enforces laws and regulations related to wire and radio communications in order to serve the national defense, promote public safety of life and property, and make available to all people of the United States “a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges.”¹ In discharging these mandates as well as its various public interest responsibilities under the Communications Act of 1934 and other statutes, the Commission considers how its actions may promote competition, innovation, and investment in communications facilities and services. To promote these ends, it is essential that the Commission adopt policies that are both effective and efficient—that is, policies that accomplish their objectives without unnecessarily distorting the market or wasting resources.

To better enable the Commission to meet these responsibilities, on April 5, 2017, Chairman Ajit Pai announced his proposal to establish a new Office within the FCC.² This new Office of Economics and Analytics (OEA)³ would be designed to more effectively and consistently incorporate economic analysis, as well as data analysis and management, in the work of the FCC. In so doing, the OEA could improve the quality of the agency’s work product, to the ultimate benefit of the American public.

Following the announcement of his proposal, the Chairman formed a working group of Commission staff to develop a plan for creating this new Office. The Chairman charged the working group with

¹ See 47 USC § 151.

² FCC Chairman Ajit Pai, *The Importance of Economic Analysis at the FCC*, Hudson Institute (Apr. 5, 2017) (Hudson Institute Speech), <https://www.fcc.gov/document/chairman-pai-economic-analysis-communications-policy>.

³ Chairman Pai’s speech referred to an Office of Economics and Data. However, to reduce potential confusion between “OED” and “OET” (the existing Office of Engineering Technology), this plan suggests the new entity be named Office of Economics and Analytics (OEA).

determining best practices, assessing current operations and arrangements within the FCC, and recommending any appropriate changes in organizational structure, practices, and authorities.

As noted in this report, the working group found that the Commission's current structure presents significant challenges to the effective use of economic analysis, as well as the analysis and management of data. Addressing these challenges will help the Commission employ such analysis as one tool that it can use to fulfill its mandate under the Communications Act. If done properly, economic analysis and the staff who help provide it—economists, data management experts, and related personnel—will be more effectively used. And this change will enrich the FCC's collaborative culture, providing benefits that will endure for years to come.

In this report, the working group provides an overview of our research, the questions asked, and the lessons learned. We then recommend a plan to establish the Office of Economics and Analytics, specifically including particular Divisions, the authorities to be granted to the Office, and the formal and informal practices that would achieve the goals the Chairman identified. Additionally, the report recommends practical steps toward implementing this plan. Appendices describe internal and external interviews conducted and relevant documents reviewed to research this report, as well as needed position descriptions for OEA and a recommended organizational chart for the new Office.

III. OVERVIEW OF RESEARCH AND GUIDING PRINCIPLES

A. RESEARCH TEAM AND PROCESS

Chairman Pai asked the following seven individuals to serve on the working group:

- Mindy Ginsburg, Deputy Managing Director, Office of Managing Director
- Sasha Javid, Attorney Advisor, Wireless Telecommunications Bureau
- Wayne Leighton, Chief, Office of Strategic Planning and Policy Analysis
- Jay Schwarz, Wireline Advisor, Office of Chairman Pai
- Royce Sherlock, Attorney Advisor, Office of General Counsel
- Walt Strack, Assistant Bureau Chief and Chief Economist, International Bureau
- Rodger Woock, Chief, Industry Analysis and Technology Division, Wireline Competition Bureau

From April through December 2017, members of the working group⁴ conducted 32 individual or group interviews with FCC staff, and 48 interviews with non-FCC individuals and groups. The internal meetings included staff and managers from all Bureaus and Offices that contain economists. The external meetings included former FCC officials, experts from various federal agencies, and industry and consumer group representatives.

Appendix I offers a list of the internal and external meetings conducted by the working group. Appendix II shows a list of relevant publications that were reviewed to obtain additional insights and lessons.

B. WHAT GUIDED OUR RESEARCH

The working group focused on several key questions and issues, some of which were outlined in Chairman Pai's speech and all of which are relevant to improving how the Commission engages in policymaking and other statutorily required duties:

- What organizational structure is needed to ensure that the work of the economists and data professionals is consistently and effectively incorporated into the Commission's business?

⁴ The working group was expanded in May from four to seven members.

- What delegated authority is needed to ensure that the work of the economists and data staff is consistently and effectively incorporated into the Commission’s business?
- What norms and practices are needed to reinforce this structure and these authorities, and to build a culture in which economic analysis and evidence-based policymaking thrive?
- What other steps should the Commission take to ensure that economic analysis properly considers and measures a proposed rule’s costs—including opportunity costs, effects on small businesses, and other relevant criteria—as well as all relevant benefits?

C. WHAT WE LEARNED

Below are summaries of the key observations about the current state of economic analysis and the use of data at the FCC, as drawn from interviews and research conducted by the working group:

- **Economists and economic analysis are not systematically incorporated in policymaking.** Economists already make critical contributions to key activities of the Commission, including in auction design, rulemakings, data analysis, transactions review, enforcement actions, and adjudications. However, economists are *not* uniformly involved in all economically relevant rulemakings. Further, economists often are not involved at the early stages of policy development when their insights can be especially relevant. In some cases, economists have faced challenges in having their voices heard. Regulatory Impact Analysis (including Cost-Benefit Analysis) is not systematically applied.
- **Economists work in silos, and cross-bureau or cross-agency coordination is limited.** While silos and limited coordination are not unusual in a large agency with functional bureaus that specialize in certain industries, they nonetheless can limit the collaboration and ultimately the productivity of the staff. One consequence of housing economists in separate Bureaus is that this has tended to limit economists’ ability to work together or share ideas with their peers in separate Bureaus.
- **Economists do not have a regular opportunity to offer a separate opinion on policy matters.** There is no process at the FCC for separate review of proposed items by economists, which contrasts with standard practice in some agencies. This could make it more challenging for economists within a Bureau to have their voices heard (due to time constraints, policy differences, or other factors), which can limit the Commission’s ability to use economic analysis to inform policy.
- **Data are not systematically managed to inform policymaking.** The FCC produces approximately ten statutorily required reports and maintains more than 400 data sets. There is much potential value in establishing an ability to compare and cross-reference these data sets. For example, data on ownership, spectrum holdings, and various other important factors may be easily accessible and sufficiently understood by the Bureaus that collect this information, but not to other economists or policymakers outside these Bureaus, who may require the data for other purposes.

The challenge of organizing a regulatory agency to effectively use its economists is not unique to the FCC. In meetings with experts in other agencies and in reviewing the literature, a common observation was that this challenge is both widespread across federal regulatory agencies and recurrent. We also learned that, at a general level, the organization of economists can be considered along a continuum with two contrasting paradigms: a centralized model in which the economists are concentrated in their own sub-unit, and a disaggregated model in which the economists are widely dispersed among the various operating units of an agency.

There was broad agreement that each of these models has advantages and disadvantages. Benefits of the centralized model include separate review of proposed rules by economist staffers and managers, better use of economist resources (less over- or under-utilization of staff), better professional development (such

as mentoring, training, and hiring), and more opportunities for quality research (white papers, for instance). Drawbacks of the centralized model include an increased potential for isolation from the rest of the agency, increased risk of exclusion at the earliest stages of proceedings, and a potential for development of an “us vs. them” mentality within the agency.

For the disaggregated model, the benefits include keeping the embedded economists well informed about relevant legal and market/industry developments, and getting them involved in proceedings at an early stage. The disadvantages of this model include economists lacking independence, and the possibility that the embedded economists are called on simply to support decisions made by non-economists.

There was disagreement, however, regarding which model would on balance result in the best outcome for the FCC. Both competition agencies—the Antitrust Division at the U.S. Department of Justice and the Federal Trade Commission—use the centralized model, and experts in those agencies tended to recommend it for the FCC as well. In contrast, other agencies such as the Environmental Protection Agency use a hybrid structure, with groups of economists embedded throughout the rule-developing units and a stand-alone group of economists that focuses on cost/benefit analysis of proposed environmental rules.

With these considerations in mind, and in response to Chairman Pai’s direction, the working group has produced a plan to make better use of economic and data analysis—which we believe will yield better policy and ultimately benefit the American people. The proposed plan is outlined below in greater detail.

IV. THE DETAILS OF THE RECOMMENDED PLAN FOR AN OFFICE OF ECONOMICS AND ANALYTICS

“We think in generalities, but we live in detail.”
Alfred North Whitehead

A. STRUCTURE

Under the plan we recommend, the OEA would have a front office that includes a Chief, Deputy Chiefs who oversee Divisions and/or topic areas, and potentially other key positions such as a Chief of Staff and Legal Advisor.⁵ The FCC’s Chief Economist and Chief Technology Officer (CTO), who traditionally have served on term assignments (e.g., one year), also would be based in OEA and report to the Chairman while working on a day-to-day basis with OEA staff. Finally, OEA would include four Divisions: an Economic Analysis Division, an Industry Analysis Division, an Auctions Division, and a Data Division. A description of each of these Divisions follows.

The Economic Analysis Division would work closely with staff across the Commission’s Bureaus and Offices on rulemakings, adjudications, transaction reviews, and related activities that require economic analysis. Many FCC economists who have expertise in one or more subject areas (e.g., media, spectrum policy, and universal service) would move to OEA’s Economic Analysis Division while continuing to

⁵ While largely complete, this list of leadership positions is not intended to be exhaustive. For example, depending on the size of the Office of Economics and Analytics, an Associate Chief for Management may be needed, either at inception or later. Also depending on the size of the Office, the role of Legal Advisor may be combined with other roles, and might include providing Office leadership with an understanding of communications law as it applies to policies to be analyzed. We note that the Office of Engineering and Technology commonly has an Associate Chief – Legal.

work closely with these Bureaus and Offices. Most or all staff from the current Office of Strategic Planning and Policy Analysis would move to the Economic Analysis Division.

The Industry Analysis Division would include economists and other staff primarily focused on collection and analysis of key data sets the FCC relies upon for understanding the industry and producing a variety of reports. In particular, staff responsible for the Form 477 collection and processing would be housed in this Division, given the centrality of this data source to much of the agency's analytic work. Given that many of the economists using the data managed by this Division would be located in other OEA Divisions, we anticipate that the Industry Analysis Division would serve as the primary clearinghouse for supplying such data throughout OEA.

The Auctions Division would include the economists, attorneys, auctions specialists, and other professionals who currently are based in the Auctions Division of WTB. The authorities and activities of the current Auctions Division would not change. Under this plan, the Chief of the Auctions Division would report to the Chief of OEA, who would be tasked with considering the auctions needs across the Commission.

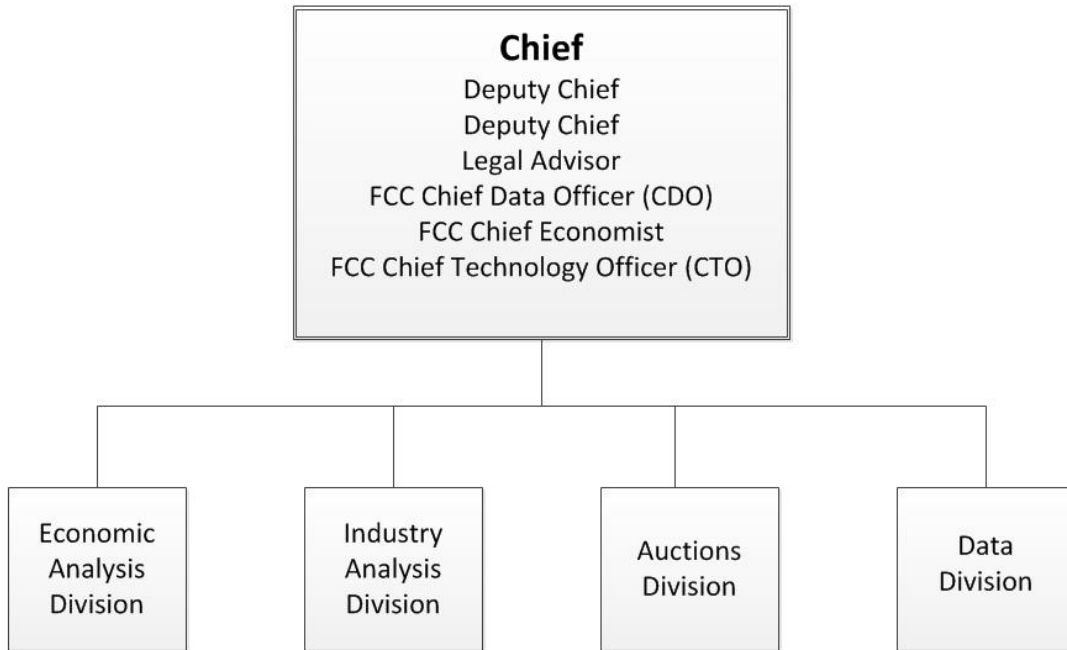
The Data Division would be managed by the Commission's Chief Data Officer (CDO). The CDO would be responsible for overseeing procedures regarding how data are gathered, maintained, and analyzed. By providing this guidance at an agency-wide level, the CDO would help to ensure that data can be shared, compared, and analyzed across Bureaus and Offices to better inform the Commission's decision making. In contrast to the staffing plan for economists, however, most of whom would move to OEA, most professionals who work with data would not move to OEA's Data Division. That is, to reiterate: a majority of Commission staff who work with data (most of whom are not economists), either on a part-time or full-time basis, would remain in the Bureaus and Offices in which they currently serve. This arrangement would reflect the fact that there are hundreds of FCC staff, including analysts, engineers and lawyers, who work with data on either a full-time or part-time basis in support of important day-to-day Bureau and Office operations such as licensing and engineering studies—operations that are functionally separate from economic analysis. The Data Division would be staffed by a small team focused on establishing data best practices, processes, and standards to meet the needs of the economists and other Commission staff who rely on data to inform policymaking and other core activities of the agency. The Data Division also would assist Bureaus and Offices with data analysis projects that meet specific needs.

While most economists within the Commission would move to OEA, as described below, each Bureau could retain a Bureau Chief Economist who would be responsible for coordinating with OEA to ensure that his or her Bureau's needs for economic and data analysis are met. Bureaus also would retain a Bureau CDO (to the extent the Bureau has one), who would maintain existing responsibilities within the Bureau and coordinate with OEA's Data Division.

Importantly, the assignment of economists to OEA's Economic Analysis Division, Industry Analysis Division, Auctions Division, or Data Division would not necessarily be based on the Bureau or Division where they currently work. Although two Divisions currently in other Bureaus would move largely intact to OEA and remain as such in discrete OEA Divisions (specifically, the Auctions Division and the Industry Analysis Division), the objective is to create an OEA that builds capabilities and integrates the work of economists across all of its Divisions to meet the needs of the Commission as a whole. An economist or other team member who might be a good fit with the work performed in one Division may be assigned there, but he or she might also be expected to work with or in another Division at another time, for a variety of reasons. These reasons could include a desire by the employee to expand skills and experiences, a request by OEA leadership to help build needed strengths in a different part of the Office, and the needs of the Bureaus and Offices with which OEA collaborates to accomplish the Commission's business.

Figure 1 illustrates the recommended structure of OEA and is followed by a discussion of each Division, as well as the Bureaus and Offices outside of OEA.

Figure 1: Office of Economics and Analytics



1. ECONOMIC ANALYSIS DIVISION

The Economic Analysis Division would include economists with relevant industry and subject matter expertise, along with other experts who can provide analytical and quantitative support. Staff in the Economic Analysis Division would work as part of multidisciplinary teams with staff in Bureaus and Offices across the Commission on rulemakings, transactions, auctions, and enforcement proceedings from the earliest stages of this process. OEA would regularly contribute to joint items with other Bureaus and Offices, and OEA staff, especially those in this Division, would provide economic analysis and other insights as needed to advance these items.

For economists and related staff with specific subject matter expertise (e.g., media, spectrum policy, etc.), this Division would provide an opportunity to work with those Bureaus or Offices that focus directly on their area of expertise. For example, these economists may engage in policy research, analysis and presentation of policy options, review of the relevant economic literature, comment review and summary, economic and econometric modeling, data collection design, assistance with Initial Regulatory Flexibility Act Analysis/Final Regulatory Flexibility Act Analysis (IRFA/FRFA) and Paperwork Reduction Act (PRA) obligations,⁶ production of language for orders, and related contributions.

The economists in this Division also would participate in the review of all transactions that involve communications facilities and services and that potentially have competitive effects. OEA economists would be part of transaction leadership teams to assign and coordinate effective economic analysis of transactions. They would work with the transaction team to develop data requests, review the merger application, meet with outside economics consultants representing stakeholders, review and summarize economic comments and relevant economic analysis, analyze submitted data and other relevant material for empirical support for claimed economic harms or benefits, and draft sections of orders addressing claims of economic harms and benefits.

In addition, the economists in the Economic Analysis Division (as well as those in OEA's other Divisions) would be given opportunities to pursue relevant research. An important advantage of this reorganization is that the economists within the Commission would interact with their peers currently in other Bureaus and Offices on a more regular basis and, in so doing, have the potential to develop ideas that subsequently could inform policy. OEA in general, and this Division in particular, would work to create both the time and the space for such ideas to emerge on a more regular basis.

2. INDUSTRY ANALYSIS DIVISION

The Industry Analysis Division in large part would be comprised of WCB's current Industry Analysis and Technology Division (IATD), along with economists and related staff from elsewhere in the Commission who are especially good complements to this work. While some economists currently serving in IATD might be based in OEA's Economic Analysis Division, many would be based in OEA's Industry Analysis Division. This reflects the agency-wide nature of the work to be performed by each Division. For example, just as economists and related staff in the new Economic Analysis Division would work with other Bureaus and Offices on various matters, economists and related staff in the Industry Analysis Division would work on projects, reports, and other items that frequently are used by multiple Bureaus and Offices.

⁶ Pursuant to the Regulatory Flexibility Act of 1980, as amended (RFA), the Commission prepares an IRFA/FRFA to evaluate potentially significant economic impacts of proposed and final rules on small entities. 5 U.S.C. §§ 601 – 612 (as amended by the Small Business Regulatory Enforcement Fairness Act of 1996, Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996)). Under the Paperwork Reduction Act of 1995, Public Law 104-13 (44 U.S.C. 3501-3520), the Commission must seek Office of Management and Budget approval when it adopts new or revised information collection requirements, a process that requires staff to estimate the costs of an information collection.

As a team, OEA's Industry Analysis Division would be comprised of economists, statisticians, business analysts, technologists and geographic information system (GIS) analysts. They would design and administer active, economically relevant periodic data collections to include Form 477 and other significant collections, provide support to Bureaus and Offices that use these data as well as support for operations such as COOP/ERG/IMT,⁷ perform analyses and studies, and assist Bureaus and Offices on other matters as needed. The work of OEA's Industry Analysis Division would be used by economists, attorneys, managers, and others in all Divisions of OEA and in Bureaus and Offices across the Commission.

For data collections, OEA's Industry Analysis Division, like IATD, would be responsible for notice and comment rulemaking proceedings associated with data collections, information model and data specification design, and interface design and development for collections necessitated by new rules that have been adopted by the Commission. These design and development tasks would include, among other activities, filer support processes (e.g., data intake design, instructions for filing, data specifications, user guides, training for call center support staff), and the development of data collection and support performance metrics to better manage and control data quality and validity. OEA's Industry Analysis Division as well as its Economic Analysis Division would prepare periodic reports on data collections.

As with the Economic Analysis Division, the economists in the Industry Analysis Division would work with other Bureaus and Offices on important matters. For example, economic analysis would be a key input to the production of many reports. With the economists who would contribute to this analysis now based in OEA, these economists could be assigned to work with these Bureaus on such reports. These include the statutorily required Video Competition Report, which would remain a project of the Media Bureau, and the Mobile Wireless Competition Report, which would remain a project of the Wireless Telecommunications Bureau, and other publications and reports for which the industry-specific knowledge would be based in the relevant Bureaus.

3. AUCTIONS DIVISION

The Auctions and Spectrum Access Division (Auctions Division), currently part of WTB, is responsible for implementing the FCC's competitive bidding authority (under Section 309(j)) through a fair and transparent auction process. The Auctions Division also works on related issues such as transitioning spectrum for new uses (relocation, re-banding) and reverse auctions to distribute funds for universal service support. The Auctions Division is widely respected across government and industry for its leadership in auction design and for its success in executing both traditional and innovative spectrum license auctions which have generated billions of dollars for the U.S. Treasury.

The Auctions Division has twenty-six team members, several of which are based in the FCC's Gettysburg operations. While the majority of these are attorneys, team members also include two economists, a program manager and several analysts focused on auction implementation. The Auctions Division has been based in WTB since its inception, which reflects its initial focus on auctioning licenses to use spectrum to provide commercial mobile wireless services. This arrangement makes less sense today, given the range of services/purposes for which auctions currently apply. For example, the Auctions Division in WTB runs auctions for the Media Bureau to award new television and radio licenses, and for the Wireline Communications Bureau to award buildout subsidies (e.g., CAF II).

OEA would incorporate the Auctions Division currently based in WTB. From within OEA, the Auctions Division would continue to exist as a well-defined team (as it currently is within WTB) and it would provide auction services to all the Bureaus currently (or interested in) using auctions. The Auctions Division would also be able to rely on staff from other Divisions within OEA for assistance. OEA, with

⁷ The term COOP refers to continuity of operations. ERG refers to Emergency Response Group. IMT refers to Incident Management Team.

guidance from OCH, would balance the competing priorities for auctions design and related work from across the Bureaus.

This relocation of the Auctions Division is not essential to the successful operation of the new OEA. Rather, the general reorganization of how the Commission engages in economic analysis and data management presents an opportunity to better position the Auctions Division to meet the needs of the Commission as a whole. It would be easier for OEA, with guidance from OCH, to view the big picture and determine priorities for the use of auction resources across the agency. In addition, to the extent the Auctions Division would draw upon the expertise of other economists within the FCC, these economists also would be based in OEA, which should increase coordination and knowledge sharing.

4. DATA DIVISION

At the FCC, data are critical to agency functions, including the review, management, and production of statutorily-mandated reports, mergers, auctions, rulemakings, and licensing systems. However, in too many cases, data at the FCC have been inaccessible to economists and other users—siloeed in various Bureaus, undocumented, trapped in legacy systems, or so poorly formatted that the data are difficult to use for new purposes, including economic analysis. Moreover, the ability to “crosswalk” (i.e., share) data between databases at the Commission is virtually nonexistent. This is particularly problematic because the FCC increasingly engages in rulemakings which cross multiple Bureaus and Offices. The recommendations we present in this document are important first steps for overcoming these challenges and for creating a data-driven organization.

The good news is that these challenges are not new or unique to the FCC. Over the past several months, we have conducted twenty interviews with data experts from both inside and outside the FCC. One member of the working group attended an industry data conference in Silicon Valley and joined various inter-agency working groups such as the Data Cabinet. Several members of the working group spoke with FCC staff involved in the last big data review, which took place in 2009. During this 2009 Data Review, FCC staff conducted a comprehensive data survey and identified more than ten major reports and over four hundred data sets. The 2009 Data Review also developed a list of recommendations on how to improve data governance at the FCC, including the creation of the CDO. Execution of these recommendations was only partially successful and the FCC no longer has an agency-wide CDO. FCC staff (past and present) were forthcoming in providing their thoughts as to why certain recommendations worked and why others failed to take hold.

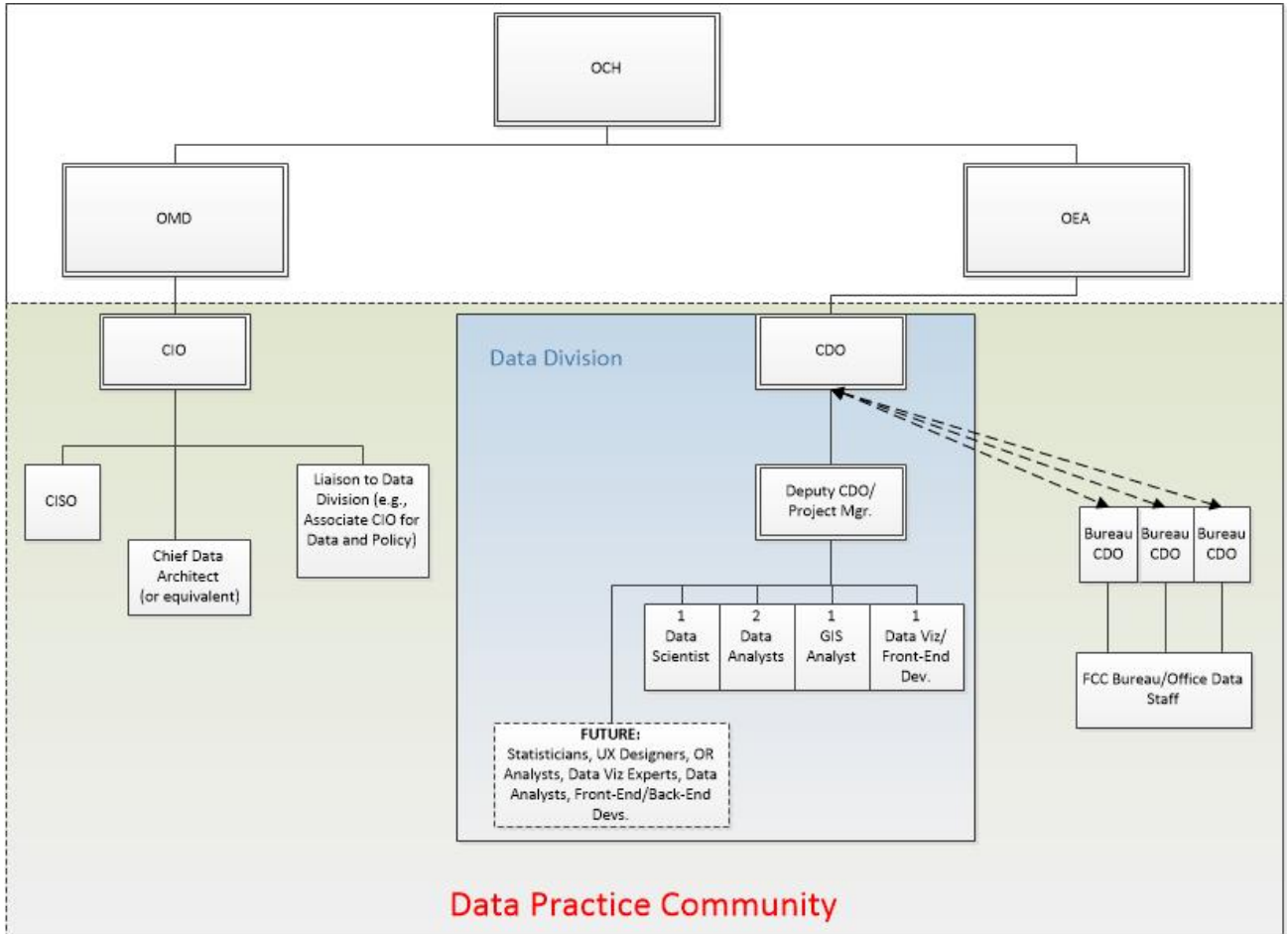
In summary, the working group made the following observations about data analysis and management at the Commission:

- **Data tasks at the FCC are highly diverse.** These include traditional government agency data tasks, such as data collections from industry, records management, geographic information creation, and general IT data management. They also include the maintenance of numerous complex licensing systems used by the Wireless Bureau, Media Bureau, Enforcement Bureau and International Bureau. In addition, many people at the Commission have daily tasks that include analyzing data for economic, engineering and financial reports.
- **There are several hundred FCC staff who analyze and manipulate data as part of their daily job functions.** They include economists, engineers, lawyers, business and data analysts, and many others.
- **It would be inefficient to centralize many data functions at the FCC, especially at the start of a transition.** This observation was regularly expressed by Commission staff and is consistent with lessons shared by experts in other agencies with established CDO operations. Looking at GIS employees at the Commission, we see how difficult it can be to disentangle their work from their respective Bureaus. These employees add value to their teams in various ways that include but extend beyond data analysis.

- **The CDO and CIO should be functionally separate, but they also should be situated at the same level within the FCC’s organizational hierarchy.** Placing the CDO within the CIO’s operation could muddy responsibilities and priorities. In contrast, separating these two functions organizationally will permit better delineation of different types of data and information systems priorities and benchmarks to assess performance (e.g., network security and privacy, handled by the CIO, and industry-oriented data management, handled by the CDO).
- **The CDO organization should start small, with relatively few staff, a handful of well-defined projects, and sufficient support.** This observation is consistent with insights taken from experts in other agencies who noted that the “lean startup” model is a good analogy. Under this model, a few well-defined projects should be successfully executed on behalf of key Bureaus to demonstrate value, the effort should be sufficiently funded, and the Chairman should visibly support this effort.

Under this plan, the Data Division of OEA would be headed by a new CDO of the Commission. Consistent with best practice that we’ve seen in other agencies, this team would be small, with just five to seven staff—the “lean startup” model. The Data Division, headed by the Commission’s CDO, would have the Chairman’s mandate to create a new data strategy for the agency, including a new Data Governance Plan to be followed by all Bureau and Offices. The Data Division would also be responsible for identifying “quick wins” for the agency which demonstrate the value of bringing improved data analytics to FCC decision-making. With the Data Division based in OEA, and organizationally separate from the CIO, it would be possible for the CDO to better understand and meet the business needs of economists and others at the agency who use data to analyze policy. Figure 2 illustrates how this approach would work.

Figure 2: Data Practice at the FCC



We expect that most staff for the new OEA’s Data Division could be filled by existing FCC employees and an additional two or three outside hires. The initial team would include the CDO, a Deputy CDO/Project Manager, a Data Scientist, a GIS Analyst, a Front-End Developer/Data Visualization Expert and Data Analysts. As this Division proves its value and takes on new responsibilities, we expect this team to eventually include dedicated Statisticians, Operations Research Analysts, User Experience (UX) Designers, Front-End/Back-End Developers, and additional Data Visualization Experts and Data Analysts.

As outlined below in the section discussing practices, various steps should be taken to ensure that data management and analysis is properly developed and coordinated between the Data Division and the rest of the Commission. These steps include adopting procedures that promote coordination between the Office of Economics and Analytics and the agency’s other Bureaus and Offices, procedures to promote coordination between the CDO and CIO, and the development of opportunities for staff across the agency to learn about best practices in data management and analysis.

5. BUREAUS AND DIVISIONS OUTSIDE OF OEA

The creation of the new Office of Economics and Analytics necessarily implies a certain degree of reorganization across the FCC. The majority of the Commission’s economists would be based within

OEA, while the majority of data management experts would remain in the Bureaus and Offices where they currently serve.

In Bureaus and Offices where economists currently serve, we recommend continuing to have a Bureau Chief Economist. The Bureau Chief Economist would play a critical role as liaison between his or her Bureau and the Office of Economics and Analytics. As noted above, many projects (e.g., rulemakings, Bureau-specific reports, etc.) would continue to be led by Bureaus, while the degree of economic analysis would be as great and likely greater than previous arrangements. The Bureau Chief Economist, who would report to his or her respective Bureau Chief (not the Chief of OEA), would be expected to fully understand the need for economic analysis in proceedings and other matters before his or her Bureau, and to be familiar (through regular coordination) with OEA's personnel and capabilities to meet those needs.

With regard to the data staff in Bureaus and Offices, where applicable, Bureau CDOs would continue to serve in their current capacities. In addition—and unlike the approach taken with the organization of economists and related staff—the vast majority of data staff would remain in their current Bureaus and Offices. Whereas OEA's various Divisions housing economists and related staff would provide operational efficiencies, opportunities for learning, and the synergies that come with a concentration of expertise, OEA's Data Division would be established for a different purpose. As an initial matter, the Data Division would work to establish protocols and best practices for data management across the FCC, and also would help Bureaus and Offices achieve defined objectives related to data analysis and management. As the FCC becomes even more data-driven and more focused on evidence-based policy making, additional staff may need to be added to the Data Division. At the same time, the key tasks of data collection and management that are currently handled by the Bureaus and Offices would remain where they are. For example, data staff who specialize in the support of licensing are appropriately based in their respective Bureaus and Offices and would continue to serve there.

“The institutional arrangements are critical. The economists at the FCC need an office that is on par with the attorneys and engineers.”
Jim Miller (former Director, Office of Management and Budget, and former Chairman, Federal Trade Commission)

B. AUTHORITIES

Under this plan, the Office of Economics and Analytics would be authorized to carry out functions aligned with its role in providing expertise in economic and data analysis, as well as the existing functions of the Office of Strategic Planning and Policy Analysis, the Wireless Telecommunications Bureau's Auctions and Spectrum Access Division (Auctions Division), and the Wireline Communication Bureau's Industry Analysis and Technology Division (IATD). In addition, OEA would be authorized to take the lead on establishing and implementing Commission-wide data-management policies in coordination with other Bureaus and Offices.

OEA's functions would include participating in all matters involving economics and data analysis; advising the Commission, Bureaus, and other Offices with respect to matters involving significant economic and data analysis and providing expertise and resources to conduct such analysis; providing expertise and assistance in assessing regulatory impacts of proposed rules; and recommending policies, rules, or other Commission action. The Office would provide expertise and resources integral to the production of congressionally mandated reports and other reports involving economic and data analysis, data collection, and data reporting, including the collection and analysis of Form 477 data as well as COOP/ERG/IMT support. OEA would also serve, in coordination with relevant Bureaus and Offices, as the Commission's principal policy and administrative staff resource with regard to planning, designing, and conducting all auctions at the FCC. Auction participation and qualification policy, auction design,

spectrum valuation, and spectrum assignment policy would be included in this work. Additionally, OEA would serve, in coordination with the Wireline Competition Bureau and Wireless Telecommunications Bureau, as the administrative staff resource with respect to the use of market-based mechanisms, including competitive bidding, to distribute universal service support. OEA would also provide strategic policy advice and research and would assume OSP's current role in coordinating the Commission's policy research activities.

OEA's data management function would include the authority to take the lead in developing, recommending, and implementing data management policies, in coordination with and with due regard for other Bureaus and Offices and the role of the CIO, including the statutory responsibilities of the CIO under the Clinger-Cohen Act and the Federal Information Security Modernization Act of 2014, and to collaborate with and advise other Bureaus and Offices with respect to data management and data analysis pertaining to communications policy matters (as distinct from data management relating to the Commission's financial or human resources functions, for example).

Performance of some of these functions would entail the exercise of authorities currently granted to WTB and WCB, and OEA would exercise its authorities in these areas in coordination with WTB and/or WCB, as applicable in given areas. In addition, the performance of various functions likely would entail coordination with other Bureaus and Offices depending on the substantive area of focus (wireline, media, public safety, etc.).

“It is not possible to do evidence-based, data-driven regulation without assessing both costs and benefits, and without being as quantitative as possible.”
Cass Sunstein (former Administrator, Office of Information and Regulatory Affairs)

C. PRACTICES

The third major component of the plan is a set of practices—some formal, some informal—which would help OEA to successfully carry out its functions. By “practices” we mean the use of new activities, processes, or tools that can improve the way the Commission goes about its work. These practices seek to address problems that we have identified but that may not be adequately addressed by the new Commission structure and OEA authorities alone. These practices also may help to create a culture that values collaboration across the agency, a consistent application of economic thinking, and ultimately, an environment that promotes sound policy to the benefit of the American public.

1. IMPROVING OPERATIONS

We recommend establishing several new practices—and reinforcing some existing ones—to directly improve how the Commission operates. These practices should facilitate productive collaboration and coordination between OEA and other Bureaus and Offices, and enhance the effectiveness of OEA's participation in the decision process with respect to items for which economic analysis is relevant or that impose data analysis demands.

- **OEA and OGC should develop an internal guidance memo on how economic analysis is to be incorporated into Commission decision-making.** The memo should establish general expectations for when and how OEA staff would be included on project teams, indicate the extent of economic analysis expected for rules with different levels of economic impact, and outline the primary elements to be covered in such an analysis (e.g., Regulatory Impact Analysis, to include Cost-Benefit Analysis). This procedural guidance would bring needed specificity to the effort to better incorporate economic concepts, issues, and analysis into the agency's deliberative process,

and also ensure a common understanding of these matters across the agency. Such guidance would be designed to avoid creating any legally binding obligations on the Commission that are not otherwise applicable under the Administrative Procedure Act and other relevant statutes.

- **The Chief of OEA should develop and maintain a guidance document describing how to apply Regulatory Impact Analysis to communications policy issues.** Given OEA's function in helping to assess regulatory impacts (including Cost-Benefit Analysis), OEA should maintain a document incorporating best practices for conducting such work based on OEA's technical expertise. This document would build on existing practice by specifically providing substantive guidance on how to evaluate the regulatory impacts in the industries the Commission regulates, including the costs and benefits of proposed rules and any differential impacts on small entities.
- **OEA should develop with each Bureau and Office informal procedures that will guide how they will work together.** Such procedures can help promote collaborative relationships between OEA and the Bureaus and Offices, while also setting a baseline expectation for managers and staff that can exist over time even as personnel changes. These procedures would establish, among other expectations, how Bureau Chief Economists and Bureau CDOs (or equivalent) would coordinate between their Bureau and OEA (such as through weekly meetings) and specify what portion of time the Bureaus and Offices would allow their data staff to work on agency-wide data initiatives run by the CDO. In addition, these procedures would clarify how OEA staff will participate on teams that handle rulemakings, transactions, auctions, or enforcement matters. While these procedures can allow for arrangements particular to each Bureau, the Office of the Chairman should provide a template which can be modified as needed.⁸
- **OEA should produce a separate, non-public memorandum on economic issues to accompany documents circulated to the Commission.** By providing Commissioners with a memorandum that offers a perspective on economic issues related to a circulated document, such issues would be included in the Commission's consideration. This regular practice would encourage meaningful collaboration between OEA and the policy-making Bureaus. Knowing that OEA would be producing the memorandum should provide an incentive to Bureaus to fully include OEA in policy development. Bearing responsibility for producing the memorandum should provide an incentive to OEA staff to thoughtfully consider each item ahead of time. This memorandum would be explicitly deliberative and non-public to facilitate dialogue among the Commissioners. For documents not addressing significant economic issues, OEA could produce a memorandum that simply states as much. The intention is that over time, as has occurred at the Federal Trade Commission, the memorandum would become an important tool for ensuring economics stays at the forefront of the discussion. The memorandum would technically be the responsibility of the OEA Chief, though we expect it would be drafted primarily by OEA economists who have been working regularly on the circulated item with Bureau staff.
- **The CDO and CIO should develop procedures outlining how they will work together.** Coordination between the CDO and CIO is critical, particularly in light of recent statutory obligations such as the Federal Information Technology Acquisition Reform Act.⁹ Among activities and processes to coordinate, decisions about data acquisition should be made in consultation with OMD's Enterprise Acquisitions Center, and to the extent it involves IT acquisitions and IT security and infrastructure, with the CIO organization. The procedures should provide for regular coordination between teams, such as through weekly meetings, and specify a

⁸ For example, bilateral arrangements may be appropriate for specific reports or data collections, such as Form 477, that are produced and used regularly.

⁹ Pub. L. No. 113-291, §§ 831-43, 128 Stat. 3292, 3438-57 (2014).

day-to-day liaison (e.g., an Associate CIO for Data and Policy) from the CIO organization who works with the Data Division. The procedures should also establish clear boundaries of responsibilities between the CDO and CIO, and specify those areas where dual responsibility is required, such as in data acquisition, accessibility, and security.

- **OEA should organize studies, workshops, roundtables, advisory committees, or other fora as needed to learn about or present information about emerging issues or policy challenges.** Future Commission rulemakings and other actions may be informed by such work. For example, studies may look beyond the economic effects of regulations under consideration to consider a larger set of factors that may have an impact on policy. This wider strategic role, currently maintained by OSP, should be continued in OEA. To the extent outside experts may provide valuable input, whether through workshops or advisory committees or other venues, these sources should be considered, as well, consistent with rules and policies addressing potential conflicts of interest, advisory committees, and the Administrative Procedure Act.
- **OEA should participate in all economist hiring for the Commission.** In consultation with the Office of the Managing Director, OEA should develop a human resources plan for staffing needs and fully participate in recruiting and hiring decisions. OEA would have the expertise to best identify the Commission's economic needs and the candidates' skills and fit. OEA would advise and assist in the Bureau's hiring of economists, much as OSP currently assists in the Bureau's hiring of economists.
- **SES performance criteria should be modified to include effective appreciation of economic issues and concepts, and effective incorporation of economic analysis.** This change would align evaluation criteria with the new focus on economic considerations, and provide appropriate incentives to SES staff. Adherence to the agreed-upon procedures between OEA and each Bureau or Office could provide a useful reference for evaluating where the criteria are being met.
- **The CDO should develop a Data Management Best Practices Guide for how data is to be collected, managed and stored across the Commission.** The guide would ensure that standards are consistent with best data practices and are clearly defined and available to all FCC staff. This document should be the foundation for the FCC's data governance policy and a key component of the overall agency data strategy. Adherence to these guidelines should be reflected in staff performance reviews to encourage use of best practices.
- **OEA should develop data dashboards with Key Performance Indicators to be agreed upon by the CDO and the Chairman's Office.** The use of data dashboards is considered a best practice because it has numerous benefits. First, a data dashboard would allow the CDO and Commission leadership to see in real-time how the agency is meeting goals with respect to data. Second, it would provide guidance as to the most important areas the new Data Division should be focusing on. Finally, if made public, a data dashboard would allow people outside the FCC to see how the quality of the data has improved over time.
- **A Data Practice Community should be created for all staff who deal with data at the Commission.** This Data Practice Community would meet regularly (e.g., monthly) and provide an opportunity for staff to coordinate on current data projects, address concerns, and share best practices. The Data Practice Community would also provide a forum for all employees interested in data to provide input to the CDO (and CIO) on the overall data strategy for the agency.

2. BUILDING NORMS/CULTURE

We recommend an additional set of Practices aiming to instill a new culture and establish new norms of agency behavior. These practices are intended to move the Commission toward customs that would effectively make it standard operating procedure to seek out and identify economic and data issues that may be hidden in new proceedings, to involve economists in all stages of a proceeding, and to draw on data analysis and data management expertise.

- **OEA should work with each Bureau to ensure at least one OEA economist is assigned to each team working on major rulemakings.** It is critical that OEA have long-term involvement in major policy areas. OEA leadership—in coordination with the Bureaus and Offices—should assign OEA economists to teams working on rulemakings, enforcement matters, transactions, or other major projects. It should be expected that this OEA staff member (or members) would be fully included in meetings, drafting, reviewing, and the like. This expectation also should come with a responsibility on OEA staff to work within the timeframes set by the Bureaus. We anticipate that OEA economists in many cases would be assigned to several policy teams at any given time.
- **The annual performance reviews for OEA staff should be informed by feedback from non-OEA units worked with during the review period.** Similarly, reviews for Bureau Chief Economists should include feedback from relevant OEA leaders, and the reviews for data staff within the Bureaus or Offices should include feedback from the CDO.¹⁰
- **OEA should develop an internal Economists and Data Professionals Code of Conduct and associated guidance on how to do the job of an economist or data professional at the FCC.** The expectations and standards that are established should reflect the need for economists and data professionals to apply high-quality analysis, and to provide this analysis through collaboration with other staff within OEA as well as all Bureaus and Offices that depend on their work. Key guidance could include, for example, how to appropriately provide economic or data advice while working with the Bureaus and how to draft an economist memorandum to accompany a circulated item. We expect the OEA leadership would seek to inculcate the Code of Conduct among OEA staff so that it is routinely observed in the conduct of OEA’s operations.
- **The Commission should establish an Honors Economist Program that is based on the successful Honors Attorneys Program.** The program should include training, development, performance criteria, and term assignments (e.g., two years) with the possibility of permanency, to serve as a recruiting tool for early-career economists, and to build enduring relationships with economists with interests in communications, technology and regulatory policy. In its role in economist hiring, OEA should incorporate the Honors Economist Program into its overall human capital planning.
- **OEA should develop protocols for a revitalized research program, with a focus on producing peer-reviewed White Papers for public release.** Consistent with the Chairman’s call to have White Papers that thoughtfully analyze markets and policy to inform the Commission’s long-run decision-making, this research program should be given the attention and resources necessary to fulfill this role. Participation in the program should be available to all FCC economists and related staff, with research time made available based on merit and subject to the Commission’s needs.
- **OEA should develop a program for mentorship of economists, data scientists, and data analysts by their peers and more experienced staff.** A conscious effort to pair early-career staff with experienced peers could offer significant gains both for the personal development of those who are mentored as well as the productivity of the agency as a whole.
- **FCCU training should be expanded to include Regulatory Impact Analysis and Data Management Best Practices.** To build capabilities and awareness across the Commission,

¹⁰ We recognize that the implementation of this concept is subject to existing personnel rules and agreements. Should any modifications be necessary, the question of whether to pursue such modifications would be a separate matter to be resolved prior to adoption of the practices envisioned here.

OEA should take the lead in developing this training (in coordination with OGC with respect to Regulatory Impact Analysis), which could be tailored to specific groups such as economists, attorneys, and others.

V. REASONING BEHIND THE RECOMMENDED PLAN

As described above, we recommend a centralized model for the organization of economists and certain data functions within OEA. This approach aims to obtain particular benefits by concentrating a large portion of the agency's economists and allied professionals¹¹ in one Office. At the same time, the plan recognizes the potential pitfalls of centralizing economic analysis at the Commission and calls for a series of new measures—both formal and informal—designed to actively promote the deep integration of OEA into the work of the Commission. By formally establishing a role for OEA in rulemakings, transactions, auctions, and enforcement matters, the recommended plan would be a bold step toward giving economists and related professionals a seat at the policymaking table with lawyers and engineers. And through informal practices, the plan identifies ways to give OEA the ability to closely collaborate with the other Bureaus and Offices.

Creating an Office that includes most of the agency's economists would benefit the Commission in many ways. In particular, a centralized OEA could more efficiently perform functions that are frequently needed across and by multiple Bureaus and Offices, or for which agency-wide consistency is desirable. For example, the Commission's Form 477 provides data and analysis used by WCB, WTB, and IB, which naturally could be handled by OEA. The Commission's auctions work is another function which in recent years has transcended Bureaus. Both the Wireless Telecommunications Bureau (WTB) and Media Bureau have direct roles in spectrum auctions,¹² while the Wireline Competition Bureau (WCB) and WTB collaborate on universal service auctions such as the upcoming Connect America Fund Phase II and the Mobility Fund Phase II auctions.¹³ Even more recently, WCB has proposed using auctions for distribution of certain toll-free numbers.¹⁴ Economists have been essential to this work.

Yet another area where agency-wide consistency is important is data policy. By giving one Office the lead responsibility for setting data policy across the Commission, best practices could be developed once and then disseminated and consistently applied. Likewise, efforts to minimize data collection burdens and procure proprietary data sets may best be accomplished by a single, dedicated Office.

A separate Office also would afford the opportunity for economic analysis and data policy to gain a new prominence at the Commission. Whereas the voices of economists may sometimes be diluted in a particular Bureau, or not heard at all as policy is developed, a single Office could routinely speak with a

¹¹ By "allied professionals," we refer to quantitative analysts such as statisticians, engineers, technologists, business and financial analysts, applied mathematicians, programmers, system analysts and program management professionals who enable end-to-end operations of data collections, report production, and the conversion of data into useful information for decision-making.

¹² For example, MB and WTB worked together on the implementation of the recently concluded incentive auction. See *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, Report and Order, 29 FCC Rcd 6567 (2014).

¹³ See, e.g., *Connect America Fund; ETC Annual Reports and Certifications; Rural Broadband Experiments*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 5949 (2016); *Connect America Fund; Universal Service Reform – Mobility Fund II*, Report and Order and Further Notice of Proposed Rulemaking, 32 FCC Rcd 2152 (2017).

¹⁴ *Toll Free Assignment Modernization*, Notice of Proposed Rulemaking, WC Docket No. 17-192, CC Docket No. 95-155, Notice of Proposed Rulemaking, 32 FCC Rcd 7885 (2017).

clear voice and be heard. By developing a structure within which OEA can consider economic matters as part of a dedicated review process, the Office could produce higher-quality work. Broader economic principles and analytic techniques could be applied consistently by OEA staff to matters in different policy areas. This would allow OEA to provide input on economic and data matters in a much more influential and productive way.

By creating OEA, a culture of economic excellence also could develop within the Commission. Through the sharing of ideas and critical review of work, OEA could become a hive of creative economic output. A single Office could facilitate seminars and other training. Collaboration on a rulemaking could lead to collaboration on forward-thinking research projects that would benefit the Commission and the public. Some of the Commission's greatest accomplishments in recent decades have been the result of such research by the agency's talented economists.¹⁵

At the same time, OEA would allow for more efficient allocation of human resources. When economists are not occupied with their typical set of projects, they could be deployed on projects where they are needed. This also would allow for better human capital development as economists over time would gain more experience with a wider number of issues. While individuals would no doubt maintain specialties in particular areas, this diversity of skill sets within OEA would benefit both employees and the agency over time. This type of work environment, where varied and meaningful experience can be gained reasonably quickly, should also benefit the agency in terms of recruitment and retention of economists.

While organizing economists and data professionals into OEA has many benefits, meaningful measures must be taken to avoid OEA being excluded—or “siloeed”—from the Commission's work. The theory underlying this plan for OEA is that a centralized organization of economists only will be successful if clear formal and informal steps are taken to counteract this possibility. For this reason, the plan relies on multiple tools designed to place OEA squarely at the heart of the Commission's work. At the same time, these tools are designed to facilitate the natural development over time of collaborative norms within the agency.

¹⁵ Hudson Institute Speech, *supra*, at 3.

APPENDIX I

LIST OF MEETINGS/INTERVIEWS

Internal Meetings

Commissioner Carr
Commissioner Clyburn
Commissioner O’Rielly
Commissioner Rosenworcel
Consumer and Governmental Affairs Bureau
ECONFCC email distribution group
International Bureau, Front Office Meeting
International Bureau, Staff Economist/Data Team Meeting
Media Bureau, Front Office Meeting
Media Bureau, Staff Economist/Data Team Meeting
Office of Engineering and Technology, Front Office Meeting
Office of Managing Director
Office of the Secretary and Enforcement Bureau
Office of Strategic Planning and Policy Analysis
Public Safety and Homeland Security Bureau and Enforcement Bureau, Front Office Meeting
Public Safety and Homeland Security Bureau and Enforcement Bureau, Staff Economist/Data Team Meeting
Wireline Competition Bureau, Front Office Meeting
Wireline Competition Bureau, Staff Economist/Data Team Meeting
Wireless Telecommunications Bureau, Front Office Meeting
Wireless Telecommunications Bureau, Staff Economist/Data Team Meeting
Meetings with individual staff members from various Bureaus and Offices who offered to provide insights or respond to specific questions of the Working Group based on their expertise or experience.

External Meetings

Jonathan Baker, Former FCC Chief Economist

Jonathan Banks, Jonathan Spalter, US Telecom

Howard Beales, Former FTC

Jamie Belcore, SBA

Tim Brennan, Former FCC Chief Economist

Mike Byrne, CFPB/Former FCC

Jonathan Chambers, Former FCC OSP Chief

Jeff Chen, Acting CDO, Department of Commerce

Neil Chilson, James Frost, David Meyer, Brian Schulz, FTC

Michelle Connolly, Former FCC Chief Economist

Paul de Sa, Former FCC OSP Chief

Susan Dudley, Former Chief of OIRA

Jeff Eisenach, Former OMB

Jerry Ellig, Former FTC; Robin Bowen, Mercatus Institute

Greg Elin, Former FCC CDO

Gerald Faulhaber, Former FCC Chief Economist

Harold Feld, Public Knowledge

Larry Fitzpatrick, Former President, Computech

Dan Gonzalez, Former FCC Chief of Staff

Joel Gurin, Former FCC

Tom Hazlett, Former FCC Chief Economist

Ken Heyer, Former FTC

Ginger Jin, Mike Vita, Andrew Stivers, FTC

Michael Katz, Former FCC Chief Economist

Ed Kearns, CDO at NOAA

Timothy Kropp, Deputy CDO at HHS

Bill Kovacic, Former FTC

Eddie Lazarus, Former FCC Chief of Staff

Ross Lieberman, Mary Lovejoy, ACA; Rebecca Thompson, Elizabeth Barket, CCA; Steve Pastorkovich, Michael Romano, NTCA; S. Jenell Trigg, Steve Coran, Lerman Senter (on behalf of WISPA)

Al McGartland, EPA

Ruth Milkman, Former FCC Chief of Staff

Jim Miller, Former OMB

Paul Pautler, Former FTC

Robert Pepper, Former FCC OSP Chief

Federal Communications Commission

Peter Pitsch, Former FCC Chief of Staff

Mike Riordan, Former FCC Chief Economist

Greg Rosston, Former FCC Deputy OSP Chief

Marius Schwartz, Former FCC Chief Economist

Stuart Shapiro, Former OIRA

Howard Shelanski, Former FCC Chief Economist

Bret Snyder, EPA

Cass Sunstein, Former Chief of OIRA

Rich Theroux, Alex Hunt, Ross Rutledge, OMB

Robin Thottungal, First Chief Data Scientist/Director of Analytics at EPA

Bryan Tramont, Former FCC Chief of Staff

Scott Wallsten, Former CEA; Tom Lenard, Former FTC

Richard Williams, Former FDA

Jane Wiseman, President, Institute for Excellence in Government, John F. Kennedy School of Government, Harvard University

APPENDIX II

RELEVANT DOCUMENTS/PUBLICATIONS

External Publications and Reports

The following list was compiled from sources suggested by meeting participants and sources identified by Working Group members.

Curtis W. Copeland, *Economics Analysis and Independent Regulatory Agencies* (2013).

Deborah Vaughn Aiken, *Benefit-Cost Analysis and Independent Regulatory Commissions: Regulatory Analysis at the Consumer Product Safety Commission in the CPSIA Era* (2017).

Elizabeth Callison & Kenneth Heyer, *Roundtable on the Use of Economic Evidence in Merger Control* (2004).

Gerald R. Faulhaber et al., *The Curious Absence of Economic Analysis at the Federal Communications Commission: An Agency in Search of a Mission*, 11 Int'l J. Comm. 1214 (2017).

Harold Furchtgott-Roth, *The Unvanquished: The Administrative State and the Federal Communications Commission* (2017).

Hester Peirce, *Economic Analysis by Federal Financial Regulators*, 9 Geo. Mason J.L. Econ. & Pol'y 569 (2013).

James C. Miller III, Chairman, FTC, Distinguished Guest Lecture at Southern Economic Association Annual Conference: Policymaking in Washington: Some Personal Observations (Nov. 14, 1984).

James C. Miller III, Chairman, FTC, Speech at Japan Federation of Economic Organizations (Sept. 23, 1982).

Jerry Ellig & Rosemarie Fike, *Regulatory Process, Regulatory Reform, and the Quality of Regulatory Impact Analysis*, 7 J. Benefit-Cost Analysis 523 (2016).

Lars-Hendrick Röller & Pierre A. Buigues, *The Office of the Chief Competition Economist at the European Commission* (2005).

Luke Froeb et al., *The Economics of Organizing Economists* (Vand. U.L. Sch., Working Paper No. 08-18, 2008).

Nat'l Ctr. for Env'tl. Econ., Off. of Pol'y, EPA, *Guidelines for Preparing Economic Analyses* (2010).

Nicola Askham, *The 9 Biggest Mistakes Companies Make When Implementing Data Governance (and How to Avoid Them All)*.

Off. of Info. & Reg. Aff., OMB, *Regulatory Impact Analysis: A Primer* (2011).

Off. of the Inspector Gen., FTC., *Evaluation of the Federal Trade Commission's Bureau of Economics* (2015).

OMB, Circular A-4 (2003).

Off. of Pol'y, EPA, *EPA's Action Development Process: Guidance for EPA Staff on Developing Quality Actions* (2011).

Paul A. Pautler, *A History of the FTC's Bureau of Economics* (Am. Antitrust Inst., Working Paper No. 15-03 & Inst. for Consumer Antitrust Stud., Working Paper No. 2015-3, 2015).

Richard Williams, *The Role of Economists in the Federal Regulatory Process* (Mercatus on Pol’y, No. 25, 2008).

Stuart Shapiro & Laura Stanley, *Economists in the Bureaucracy: A Question of Autonomy* (Mercatus on Pol’y, 2016).

Stuart Shapiro, *Structure and Process: Examining the Interaction between Bureaucratic Organization and Analytical Requirements*, 34 Rev. Pol’y Res. 682 (2017).

Thomas K. McCraw, *Prophets of Regulation* (1984).

Thomas W. Hazlett, *Economic Analysis at the Federal Communications Commission: A Simple Proposal to Atone for Past Sins* (Resources for the Future, Discussion Paper 11-23, 2011).

William E. Kovacic, *The Federal Trade Commission at 100: Into Our 2nd Century – The Continuing Pursuit of Better Practices* (2009).

APPENDIX III

RECOMMENDED JOB DESCRIPTIONS

The Office of Managing Director, in consultation with the Office of Economic Analysis, should produce Position Descriptions for the following positions, along with others as needed.

- Chief of OEA
- Deputy Chief
- Legal Advisor
- Chief Economist (Intergovernmental Personnel Agreement)
- Chief Technology Officer (Intergovernmental Personnel Agreement)
- Chief Data Officer
- Division Chief – Economic Analysis
- Division Chief – Industry Analysis
- Division Chief – Auctions
- Division Chief – Chief Data Officer

APPENDIX IV

RECOMMENDED ORGANIZATIONAL CHART

The following recommended organizational chart also appears as Figure 1 in this report.

