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Consul General, Mexico

Kim Kawada
Chief Deputy Executive Director, SANDAG



BOARD OF DIRECTORS AGENDA

➤➤➤ **Please Note Meeting Time** ◀◀◀

Friday, November 3, 2017

9 to 10:30 a.m.

**SANDAG Board Room
401 B Street, 7th Floor
San Diego**

AGENDA HIGHLIGHTS

- **SANDAG EXECUTIVE DIRECTOR RECRUITMENT**
- **SANDAG "PLAN OF EXCELLENCE"**
- **IMPLEMENTATION OF ASSEMBLY BILL 805**
- **SANDAG 7-POINT DATA ACCURACY AND MODELING WORK PLAN**

PLEASE SILENCE ALL ELECTRONIC DEVICES DURING THE MEETING

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MESSAGE FROM THE CLERK

In compliance with Government Code §54952.3, the Clerk hereby announces that the compensation for legislative body members attending the following simultaneous or serial meetings is: Executive Committee (EC) \$100, Board of Directors (BOD) \$150, and Regional Transportation Commission (RTC) \$100. Compensation rates for the EC and BOD are set pursuant to the SANDAG Bylaws, and the compensation rate for the RTC is set pursuant to state law.

MISSION STATEMENT

The 18 cities and county government are SANDAG serving as the forum for regional decision-making. SANDAG builds consensus; makes strategic plans; obtains and allocates resources; plans, engineers, and builds public transit; and provides information on a broad range of topics pertinent to the region's quality of life.



Welcome to SANDAG. Members of the public may speak to the Board of Directors on any item at the time the Board is considering the item. Please complete a Request to Comment form, which is located in the rear of the room, and then present the form to the Clerk of the Board seated at the front table. Members of the public may address the Board on any issue under the agenda item entitled Public Comments/Communications/Member Comments. Public speakers are limited to three minutes or less per person. The Board may take action on any item appearing on the agenda.

Both agenda and non-agenda comments should be sent to SANDAG via comment@sandag.org. Please include the Board meeting date, agenda item, your name, and your organization. Any comments, handouts, presentations, or other materials from the public intended for distribution at the Board meeting should be received by the Clerk of the Board no later than 12 noon, two working days prior to the meeting. All public comments and materials received by the deadline become part of the official project record, will be provided to the members for their review at the meeting, and will be posted to the agenda file as a part of the handouts following each meeting.

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Board of Directors

Friday, November 3, 2017

ITEM NO.

RECOMMENDATION

1. PUBLIC COMMENTS/COMMUNICATIONS/MEMBER COMMENTS

Public comments under this agenda item will be limited to five public speakers. Members of the public shall have the opportunity to address the Board on any issue within the jurisdiction of SANDAG that is not on this agenda. Other public comments will be heard during the items under the heading "Reports." Anyone desiring to speak shall reserve time by completing a "Request to Speak" form and giving it to the Clerk of the Board prior to speaking. Public speakers should notify the Clerk of the Board if they have a handout for distribution to Board members. Public speakers are limited to three minutes or less per person. Board members also may provide information and announcements under this agenda item.

REPORTS

2. SANDAG EXECUTIVE DIRECTOR RECRUITMENT (Vice Chair Terry Sinnott)

DISCUSSION/
POSSIBLE ACTION

The Executive Director Recruitment Subcommittee will recommend that the Board of Directors: (1) authorize the Vice Chair to execute a contract award with the selected Executive Search Firm; and (2) approve the use of up to \$150,000 from the Contingency Reserve for recruitment-related expenses.

3. SANDAG "PLAN OF EXCELLENCE" (Vice Chair Terry Sinnott, Mayor Serge Dedina, Mayor Steve Vaus)

DISCUSSION/
POSSIBLE ACTION

The Independent Examination Subcommittee will present a plan to implement ideas discussed by the Board of Directors and recommendations from the Hueston Hennigan LLP report regarding improvements to SANDAG operations.

+4. IMPLEMENTATION OF ASSEMBLY BILL 805 (Vice Chair Terry Sinnott, Julie Wiley)

DISCUSSION

Assembly Bill 805 (Gonzalez Fletcher) goes into effect on January 1, 2018, and will require a wide range of changes at the agency. Staff will present an overview of tasks required for implementation.

+5. SANDAG 7-POINT DATA ACCURACY AND MODELING WORK PLAN (Mayor Steve Vaus; Ray Major)

INFORMATION

Staff will provide an update on the implementation of the 7-Point Data Accuracy and Modeling Work Plan, which is included in the proposed SANDAG "Plan of Excellence."

6. CONTINUED PUBLIC COMMENTS

If the five-speaker limit for public comments was exceeded at the beginning of this agenda, other public comments will be taken at this time. Subjects of previous agenda items may not again be addressed under public comment.

7. UPCOMING MEETINGS

INFORMATION

The next Board Business meeting is scheduled for Friday, November 17, 2017, at 9 a.m. Please note, this meeting is scheduled for the third Friday of the month due to the holiday schedule.

8. ADJOURNMENT

+ next to an agenda item indicates an attachment



**BOARD OF DIRECTORS
NOVEMBER 3, 2017**

ACTION REQUESTED: DISCUSSION

IMPLEMENTATION OF ASSEMBLY BILL 805

File Number 8000100

Introduction

Staff has begun the process of identifying the action steps that will be necessary to implement Assembly Bill 805 (AB 805) (Gonzalez Fletcher), which will go into effect on January 1, 2018. A comparison of the changes required by AB 805 is provided in a table entitled AB 805 Comparison of Provisions (Attachment 1). The implementation tasks have been broken into seven categories, which are discussed in this report. Timelines for each category are proposed and included in Attachment 2.

The Board of Directors is asked to discuss the various implementation task categories and provide any necessary direction to staff. The Executive Committee typically is tasked with reviewing changes to Bylaws and Board Policies, as well as legislative matters. The Board may want to consider using the Executive Committee to oversee implementation of AB 805 requirements, or alternately creating a Board subcommittee.

Discussion

Implementation Task Categories

Changes to Voting Processes

For Board of Directors meetings, AB 805 requires a reallocation of the weighted votes, use of the weighted vote when certain conditions are met, and a change in the manner in which the weighted vote would be allocated for the City of San Diego and the County of San Diego when one of their seats is vacant during a meeting. Additionally, the Port of San Diego will need to be added to the Transportation Committee as a voting member and a new Audit Committee and voting process will need to be established.

Staff proposes that with the exception of the changes related to the Audit Committee, the bulk of the work in this category be carried out by staff over the next two months, with completion scheduled for some time prior to the first Board of Directors and Transportation Committee meetings in January 2018. Modifications that are necessary for the Audit Committee in this category would be completed prior to its first scheduled meeting. Based on the proposed timeline discussed below, this likely will be sometime in July or September 2018.

Updates to Board Policies and Bylaws

Changes to Board Policies and Bylaws typically are brought to the Executive Committee and Board of Directors on an annual basis. In addition to these routine annual changes, there are expected to be a number of changes to Board Policies and Bylaws needed to implement the Plan of Excellence and AB 805 provisions. Staff plans to bring the proposed routine changes and the Plan of Excellence changes to the Executive Committee in December 2017 and the proposed AB 805 changes in January 2018, with a goal of adoption of all of the policies by the Board in February 2018.

Creation of Audit Committee

AB 805 adds new provisions to Public Utilities Code Section (PUC) 132351.4 that require the addition of a new Policy Advisory Committee (PAC). This new PAC, which will be the Audit Committee, is to consist of five voting members, with two Board members and three members of the public appointed by the Board. The responsibilities of the Audit Committee include recommending the firm that will conduct annual financial audits for the agency, hiring the independent performance auditor, and approving the annual audit plan of the performance auditor.

There are a range of options the Board may wish to consider for selecting the new Audit Committee members. For example, an application process such as the one used for Board officer candidates could be used for selecting members serving on the Audit Committee from the Board. Or, certain chairs from other PACs or the Board Chair and Vice Chair could automatically be selected to serve. Several workable alternatives can be discussed with the Executive Committee and Board as part of the Board Policy amendment process discussed above. As for the process of choosing members of the public to serve on the Audit Committee, an application process based on selection criteria taking preferred experience into account could be used, which is the method currently used for selecting members of the *TransNet* Independent Taxpayer Oversight Committee.

Implementation would occur after the Board first decides on the selection process for the new Audit Committee and adopts the relevant Board Policy changes. Staff estimates that it will then take approximately four to six months following the Board's decision to seat the new members for the Audit Committee. This means that the Audit Committee could start meeting in July or September 2018.¹

Addition of Independent Performance Auditor

Amendments to PUC Section 132354.1 within AB 805 call for the new Audit Committee to "appoint an independent performance auditor, subject to approval by the board, who may only be removed for cause by a vote of at least two-thirds of the audit committee and the board." That section also states that the performance auditor shall have the power to "appoint, employ and remove" personnel and "prescribe their duties, scope of authority, and qualifications". This language is flexible enough for the Board to set policy to allow the Audit Committee to either hire the performance auditor as a contract employee, similar to the process used to fill the Executive Director position, or hire a consulting firm to carry out performance auditing services similar to the process used to hire a financial auditing firm. SANDAG currently has one full-time employee and

¹ It is assumed that the Board of Directors and PACs will not meet during the month of August.

two part-time retired annuitants performing internal auditor functions that focus on financial and administrative procedure reviews, but these positions do not have the scope of authority or employment termination provisions called for in AB 805.

There are pros and cons to either an employee or consultant firm approach. Over the next few months, staff will research best practices and lessons learned at other agencies with independent performance auditors. Based on the results of this research, staff plans to bring information and recommendations to the Board of Directors by February 2018 regarding timelines and expenses. Assuming that the new Audit Committee will begin meeting in either July or September 2018, the hiring process for the performance auditor could then begin about a month thereafter, with the hiring process likely taking three to four months

Another provision in PUC Section 132354.1 states that SANDAG must include provisions sufficient to allow the independent performance auditor to audit SANDAG's contracts with consultants, vendors, and agencies. Staff plans to insert the necessary language into SANDAG contract templates by January 1, 2018, to allow for this to occur.

Skilled and Trained Labor for Construction Contracts

Staff has conducted some preliminary research regarding steps SANDAG will need to take to implement the provisions of AB 805 concerning use of a skilled and trained workforce on projects with construction contracts in an amount exceeding \$1 million that are executed after January 1, 2018. Skilled and trained workforce requirements, which focus on using a certain percentage of workers who have graduated from formal apprentice programs versus traditional on-the-job training, can be implemented quickly by SANDAG by including the necessary terms in SANDAG invitations for bids. Based on conversations with other entities covered by a similar mandate (such as the San Diego Unified School District); however, it could be difficult to implement for construction contractors in the San Diego region if there are an insufficient number of workers in the region who have completed the required training in the necessary crafts.

AB 805 provides for two alternatives to the skilled and trained workforce requirements. SANDAG can either (1) enact project labor agreements (PLAs) between the agency and the various construction-related labor unions; or (2) require its construction contractors to have PLAs in place. Conversations with agencies such as the Los Angeles County Metropolitan Transportation Agency, which uses agency-union PLAs, have indicated that negotiations of such agreements can take between seven months to three years.

Implementing either the skilled and trained workforce provisions or a PLA will require SANDAG to hire additional staff. The preliminary estimate is one to two additional staff persons. Additionally, the PLA options also would require SANDAG to hire outside legal counsel with expertise in an area of law the agency currently does not have covered under existing contracts.

To implement the skilled and trained labor provisions by January 1, 2018, staff plans to make changes to the construction procurement and contracting templates by January 1, 2018. Staff will return to the Board of Directors by spring 2018 with estimates regarding the costs and schedule for utilizing PLAs if the Board provided direction to staff to pursue this option.

New Reporting, Processes, and Planning Requirements

AB 805 includes certain new reporting requirements, and administrative processes. These include annual reports that Board members must provide to their home agencies regarding SANDAG activities, a new process for the Board to monitor the SANDAG employee evaluation process, Board-adoption of internal control guidelines to prevent and detect financial errors and fraud, and a new annual report to the Legislature regarding public transit in the region.

Additionally, the Regional Plan will be required to identify transportation strategies to reduce pollution exposure in disadvantaged communities and strategies that provide for mode shift to public transportation. Other Regional Comprehensive Plan elements that previously were optional for future inclusion such as water quality and supply, energy, solid waste, and air quality are included in the list of components of the plan required now.

The timeline for carrying out these tasks will need to be staggered over the next year due to their connection to other related work efforts. The new planning requirements will be incorporated into the development of the 2019 Regional Plan, which currently is under way. The first cycle of new reporting and processes would be tied to the end of FY 2018, as well as budget reports for FY 2019.

Budget Modifications

A local agency is permitted to make a claim to the Commission on State Mandates for a determination of whether legislation such as AB 805 contains costs mandated by the state. It is unclear at this time whether such a claim would be successful, but in order to keep this possibility open, SANDAG will need to track its expenses associated with implementing AB 805. The Finance Department has set up a new Overall Work Plan number for AB 805 implementation costs and will encumber an initial amount of \$50,000 from the agency contingency fund, pending Board approval. Staff will develop an estimate for potential implementation costs for the remainder of FY 2018 and bring a proposed budget amendment with potential funding options to the Executive Committee by December 2017.

Next Steps

Staff will return to the Executive Committee and Board periodically over the next year to obtain direction and report on the progress of implementing AB 805's requirements.

KIM KAWADA
Chief Deputy Executive Director

Attachments: 1. AB 805 Comparison of Provisions
2. Proposed AB 805 Implementation Timeline

Key Staff Contact: Julie Wiley, (619) 699-6966, julie.wiley@sandag.org
Robyn Wapner, (619) 699-1994, robyn.wapner@sandag.org

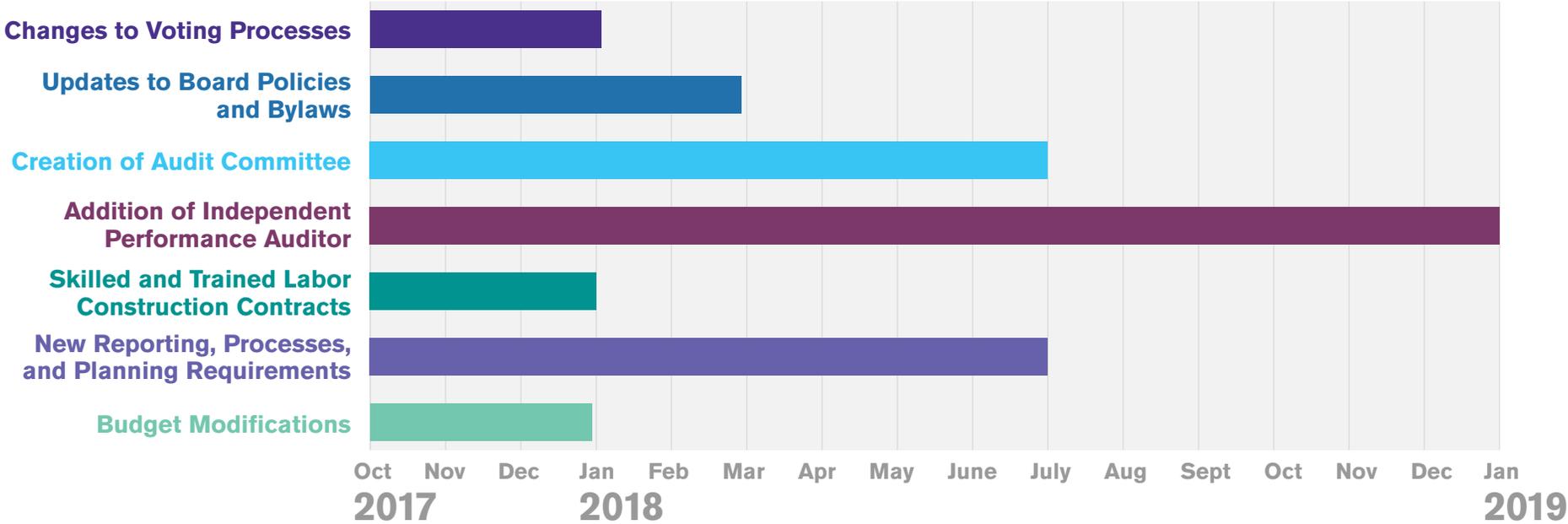
	CURRENT	UNDER ASSEMBLY BILL 805
BOARD OF DIRECTORS	City of San Diego governing body appoints a primary and secondary representative to the SANDAG Board of Directors.	The primary and secondary representatives from the City of San Diego on the SANDAG Board of Directors must be the Mayor and Council President.
	Chair and Vice Chair of Board of Directors elected on an annual basis based on majority of weighted and tally vote.	Chair and Vice Chair of Board of Directors elected every two years based on majority of weighted vote. Chair and Vice Chair may not be from the same subregion.
	Agency utilizes accounting and finance internal control procedures based on best practices and industry standards.	Board of Directors is required to develop internal control guidelines.
	Executive Director has the administrative authority to evaluate performance of agency's employees.	Board of Directors is required to develop and adopt an administration policy that includes a process to conduct staff performance evaluations on a regular basis to determine if the knowledge, skills, and abilities of staff members are sufficient to perform their respective functions, and shall monitor the evaluation process on a regular basis.
	No required annual reports to the Legislature.	Board of Directors shall provide an annual report, developed by the Transportation Committee, to Legislature that outlines the public transit needs, transit funding criteria, recommended transit funding levels, additional work on public transit, and funds spent explicitly on public transportation.
	No required annual reports by Board Members.	Board members shall make an annual report to their member agencies at a public meeting that includes a summary of activities by the agency including, but not limited to, program developments, project updates, changes to voter-approved expenditure plans, and potential ballot measures.
ELECTION AUTHORITY	SANDAG may call an election, including an advisory election, in San Diego County on any ordinance or measure regarding the governance of or matters related to the powers, privileges, or duties of the agency.	SANDAG may call an election, including an advisory election on the same matters; however, the ordinance or measure must be consistent with, and cannot be in conflict with, state law.

VOTING SYSTEM	City of San Diego and County of San Diego decide how to split votes between primary and secondary representatives on Board of Directors (including in case of absences).	City of San Diego and County of San Diego must split votes equally between each of their two representatives (does not provide for votes to be consolidated in case of absences).
	Majority of weighted and tally vote based on "member agencies" present required for action on non-Consent items.	Majority of tally vote required for action on all items. Provides new option for two jurisdictions to call for weighted vote. If weighted vote receives at least 51 percent of the vote with four separate jurisdictions in support, it supersedes original tally vote.
	Weighted votes capped at 40 votes per member agency.	Weighted votes capped at 50 votes per member agency.
POLICY ADVISORY COMMITTEES	Established five Policy Advisory Committees – Executive, Transportation, Regional Planning, Public Safety, and Borders.	<p>Adds new Policy Advisory Committee (Audit Committee) composed of five voting members: two Board-appointed Board members and three Board-appointed public members.</p> <p>Audit Committee responsible for making recommendation to the Board on the contract of the firm conducting the annual financial statement audits and the hiring of the new independent performance auditor; and approving the annual audit plan after discussion with the independent performance auditor.</p>
	Transportation Committee has nine voting members representing east county, north county coastal, north county inland, south county, City of San Diego, County of San Diego, Metropolitan Transit System, North County Transit District, and San Diego County Regional Airport Authority.	Adds San Diego Unified Port District as voting member to Transportation Committee.
	No Board member may serve as a member of more than two standing Policy Advisory Committees at any one time.	No Board member may serve as a member of more than two standing Policy Advisory Committees at any one time, except those Board members serving on the Audit Committee.

INDEPENDENT PERFORMANCE AUDITOR	<p>SANDAG utilizes independent firms for annual financial audits and employs a Principal Management Internal Auditor and two part-time retired annuitants to carry out some internal audit functions.</p> <p>Pursuant to <i>TransNet</i> Ordinance, the Independent Taxpayer Oversight Committee selects independent firm(s) to carry out fiscal, compliance, and performance audits of all <i>TransNet</i> expenditures on an annual and triennial basis.</p>	<p>The Audit Committee shall select an independent performance auditor, subject to approval by the Board of Directors, who may only be removed for cause by a vote of at least two-thirds of the Audit Committee and the Board.</p> <p>The independent performance auditor shall have authority to conduct audits of all departments, offices, boards, activities, agencies, and programs of the agency.</p> <p>The auditor shall prepare an annual audit plan. The auditor shall have the power to appoint, employ, and remove assistants, employees, and personnel as deemed necessary for the efficient and effective administration of the affairs of the office and to prescribe their duties, scope of authority, and qualifications.</p> <p>The auditor may investigate any material claim of financial fraud, waste, or impropriety within the agency and for that purpose may summon any officer, agent, or employee of the agency, any claimant, or other person, and examine him or her upon oath or affirmation.</p>
REGIONAL PLAN	<p>The Regional Comprehensive Plan is a component of San Diego Forward: The Regional Plan (Regional Plan). Disadvantaged communities for purposes of social equity evaluations in the Regional Plan currently include low income, seniors over age 75, and minority groups.</p>	<p>Regional Plan must include additional analysis for disadvantaged communities as defined by Health and Safety Code Section 39711 and identify transportation strategies to reduce pollution exposure in those communities. Disadvantaged communities include areas disproportionately affected by environmental pollution and other hazards that can lead to negative public health effects, exposure, or environmental degradation, and areas with concentrations of people that are of low income, high unemployment, low levels of homeownership, high rent burden, sensitive populations, or low levels of educational attainment.</p>
REGIONAL PLAN	<p>Regional Plan includes land use and transportation strategies to achieve per capita greenhouse gas emission reduction targets for passenger vehicles set by the California Air Resources Board, without prioritizing a particular mode.</p>	<p>Regional Plan must include strategies that specifically provide for mode shift to public transportation.</p>
REGIONAL PLAN	<p>At some future date, components such as water supply, air quality, solid waste, economy and energy should be part of Regional Plan.</p>	<p>Water supply, air quality, solid waste, economy and energy included in the list of components to be included in the Regional Plan.</p>

CONTRACTS	<p>Standard agency contract language includes provision to allow the state, State Auditor, SANDAG, or federal officials access to any materials to determine whether the correct amounts were charged to SANDAG.</p>	<p>All agency contracts required to include provision to allow the independent performance auditor access to the contracting entity's records needed to verify compliance with the terms specified in the contract.</p>
	<p>With the exception of Design-Build and Construction Manager/General Contractor procurements, construction contracts require compliance with Labor Code provisions generally applicable to public works projects, which do not include an obligation to utilize "skilled and trained" workers or project labor agreements, but do require payment of prevailing wages. Journeypersons are not required to be graduates of certified programs to be considered skilled and trained workers, they can become journeypersons after working a certain amount of time in the craft as an on-the-job apprentice.</p>	<p>The agency shall not enter into a construction contract over \$1 million dollars with any entity unless the entity provides an enforceable commitment that the entity and its subcontractors at every tier will use a skilled and trained workforce to perform all work on the project or a contract that falls within an apprenticeship occupation in the building and construction trades. The skilled and trained workforce definition requires a certain percentage of journeypersons to be graduates of an approved apprenticeship program for the applicable occupation. After January 1, 2018, the amount required is 40 percent, and the percentage escalates by another 10 percent each year until 2020 when it reaches 60 percent.</p> <p>This requirement does not apply if any of the following requirements are met:</p> <ol style="list-style-type: none"> (1) The agency (SANDAG) has entered into a project labor agreement that will bind all contractors and subcontractors performing work on the project or the agency has contracted to use a skilled and trained workforce and the entity has agreed to be bound by that project labor agreement. (2) The project or contract is being performed under the extension or renewal of a project labor agreement that was entered into by the agency before January 1, 2017. (3) The construction contracting entity has entered into a project labor agreement that will bind the entity and all its subcontractors at every tier performing the project or the entity has contracted to use a skilled and trained workforce.

Proposed AB 805 Implementation Timeline





**BOARD OF DIRECTORS
NOVEMBER 3, 2017**

ACTION REQUESTED: INFORMATION

**SANDAG 7-POINT DATA ACCURACY
AND MODELING WORK PLAN**

File Number 2300901

Introduction

On February 24, 2017, the Board of Directors unanimously approved a 7-Point Data Accuracy and Modeling Work Plan (7-Point Plan) to strengthen accuracy, quality, and transparency in data, analytics, and modeling programs at SANDAG (Attachment 1). The 7-Point Plan investigates the cause of the errors in the agency's Demographic and Economic Forecasting Model (DEFM), what impacts the errors had on work products, and how those impacts will be addressed. It also calls for the development of processes and safeguards that could be put in place to ensure similar problems do not occur again. This report provides an update on progress to implement the 7-Point Plan.

The 7-Point Plan will be incorporated into the proposed Plan of Excellence (Item No. 3 of this Board agenda), a comprehensive effort to consolidate, evaluate, and implement numerous ideas originating from a variety of sources for agency reform and improvement.

Discussion

Point 1: Conduct Detailed Review

Conduct a detailed review of the nature of the error in DEFM and its root cause. Review and validate input data, transformations, and equations in the Series 13 forecasting model (the most recent series completed using DEFM) to ensure data accuracy and integrity of the model results. Present this information to the Board of Directors.

Status

The detailed review of DEFM is completed. The analysis concluded that data input errors introduced to DEFM inflated industry output for 3 of DEFM's 50 economic sectors. These errors caused four key variables in the model (labor productivity, wages, personal income, and taxable retail sales) to also be inflated. In particular, the taxable retail sales forecast was overestimated by about 25 percent, resulting in the miscalculation of Measure A revenue projections. Other economic variables in the model were affected as well, but the effects of the error were not as pronounced or wide-ranging as may have been possible due to analyst adjustments during the forecasting process.

Staff determined that the most widely used planning variables (population, jobs, and housing) from DEFM were insulated from the effects of these over-estimations because they were developed independently from the economic variables and as such, did not have an effect on projections.

Further, additional analysis showed that the results appeared reasonable compared to third-party forecasts.

SANDAG discontinued the use of DEFM at the end of the Series 13 forecasting process and is developing a new long-range forecasting system that is under expert review (described further in Point 5). The new modeling system will not use any DEFM components and is expected to be completed in the next year.

Point 2: Conduct Dependency Analysis

Identify key SANDAG reports and deliverables that used data from Series 13. Evaluate the significance of the impacts from any potential forecasting errors and the potential effects on findings and policy recommendations.

Status

SANDAG conducted an extensive examination to identify the key SANDAG reports that used Series 13 data and determine the extent to which the data error in DEFM may have affected SANDAG products and other reports. This included a comprehensive internal survey of SANDAG staff and work products (including Data Surfer), as well as outreach to Service Bureau customers and planning and public works directors across the region.

Income forecast data from Series 13 was publicly available through the DataSurfer website. Additionally, there were a limited amount of Service Bureau requests that utilized the economic variables from DEFM. Those Service Bureau customers were contacted and no recalculations were requested.

The key SANDAG reports and deliverables that used data from Series 13 are previous Plans of Finance and San Diego Forward: The Regional Plan (Regional Plan). Previous Plans of Finance were most directly impacted due to their dependence on taxable retail sales revenue assumptions. New revenue forecasts (based on the consensus forecast approach approved by the Board of Directors in December 2016) were used to develop the 2016-2017 Plan of Finance.

The Regional Plan primarily uses the planning variables from DEFM (i.e., population, jobs, and housing). Some income variables are included in the Regional Plan appendices for reference but are not used for planning purposes. As such, the impact of the errors on the Regional Plan was limited.

The household income variables also are used in the SANDAG Activity-Based Model. These variables have been corrected so that all new requests (and the 2019 Regional Plan update) are using the corrected income data.

At this time, all known issues related to the Series 13 data have been addressed; however, SANDAG will remain alert for instances where the affected variables may have been used both within and outside SANDAG, and to take any corrective action necessary.

Point 3: Regional Growth and Travel Demand Forecasts Model Flow

In preparation for future forecasts, map all data flow from source through databases, models, and outputs to provide transparency and identify areas for improved quality assurance processes. Complete online documentation and visual mapping of interactions in the model, showing all data sources, processes, interactions, and flows.

Status

Staff has documented the modeling process in two diagrams that identify numerous places where data are inputted, transformed, outputted, and used in different submodels. The first is a data development diagram, which maps all externally sourced data and outlines how SANDAG develops the data that will be used to produce the regional growth forecast. The second is the Growth Forecast and Travel Demand Forecast Model flow diagram, which documents the model components used to produce the regional forecast and the travel demand forecast, and shows the links within and between the models.

Utilizing these diagrams, staff will begin instituting and formalizing quality assurance/quality control (QA/QC) processes continuously so that data review and checks may occur on a consistent basis. These diagrams will serve as living documents as the forecast and modeling processes continue to be refined as part of the 7-Point Plan.

Point 4: Improve Data Governance

Implement a formal data governance program to improve the availability, usability, accuracy, and integrity of data produced and utilized throughout the agency. As a first step, document the customer-supplier relationship between SANDAG staff and the SANDAG Technical Services Department. This effort will lead to a better understanding of the type of data that agency staff request from Technical Services and a better understanding of how the data are requested, stored, used, and versioned. This information will be used to develop a data warehouse, standardize data extraction routines, and ensure consistency of data.

Status

Staff conducted a survey to document the customer-supplier relationship between Technical Services and SANDAG staff. The survey found 82 percent of data is provided by the Technical Services Department and half of that data is provided in an informal way (person-to-person requests). This has led to difficulties in explaining or replicating analyses. It also has resulted in situations where inconsistent data were used from project to project.

As a first step towards formal data governance, an internal system (Data and Analysis Request Form) was created to track internal and external data requests (not including Public Records Act requests). This system will help ensure more efficient and consistent use of SANDAG data across the agency. To date, more than 40 requests have been logged. The Data and Analysis Request Form process will continue to be used to collect data and analytic requests and provide a means for transparency. With this type of process in place, staff will be better equipped to track projects and, where necessary, elevate the review of the analyses to a newly created Peer Review Process (described in Point 6) and executive management if necessary.

Point 5: Review and Oversight

Validate the new SANDAG population, housing, and economic forecasting model using an independent expert review committee, including convening a panel of experts in economics, demographics, and land use to review the methods, data sources, and assumptions of the new SANDAG forecasting model. The panel will evaluate the efficacy and sufficiency of the proposed Series 14 forecasting model to adequately forecast population, housing, and economic variables for SANDAG planning purposes.

Status

In FY 2016, the Board of Directors allocated resources to create a new economic and demographic forecast model as a replacement for DEFM. To evaluate the new demographic and economic model for the regional growth forecast, SANDAG convened an Expert Review Panel as part of the newly implemented Peer Review Process described in Point 6. In general, the Panel recommended substantial additions to the model, such as incorporating a short-term economic forecast and providing forecast ranges.

As staff continues to incorporate the Panel's recommendations into the new demographic and economic model, an alternative regional growth forecast solution is being developed for the 2019 Regional Plan and is scheduled to be presented to the Board of Directors in December.

Point 6: Enhance Transparency

Develop a set of agency methods and standards to ensure data and analytic transparency, including establishing checking points where full disclosure and analysis are provided to ensure that others can see how models were developed, how data was processed, and what assumptions were made along the way.

Status

In order to ensure data and analytic transparency, staff identified three key areas of improvement:

1. Data transparency: Documentation and accessibility of all SANDAG-derived data and data inputs into the modeling process.
2. Analytic transparency: Documentation of assumptions, formulae, and calculations used in SANDAG models, reports, tables, and charts. Reports providing clear explanations about how conclusions are drawn from data, and clearly articulating critical takeaways.
3. Process transparency: Documentation of procedures and methods used to collect, refine, calculate, and analyze data.

One of the key processes implemented to date is the Peer Review Process, which includes a process for internal/external analysts and experts to critically review and/or question models, calculations, and analytics before the work is released. The Peer Review Process also provides an opportunity for escalating anomalies/concerns to upper level management as needed. As of the end of October 2017, more than 20 Peer Review Processes have been convened to review data and analyses.

Improving data transparency is an ongoing effort. Staff will develop new data storage and retrieval systems to increase data availability and documentation. In addition, staff will continue to refine the Peer Review Process and incorporate best practices in data analytics and data visualization to improve reports, presentations, and other information.

Point 7: Develop and Formalize Processes

Understand how staff roles, work flows, and technology (e.g., models, databases, software) contribute to producing key agency deliverables. This information will be used to realign the Technical Services Department, as well as add professional staff in quality assurance and a dedicated database administrator. This effort will reduce single points of failure, and increase accountability, visibility, and efficiency. Conduct research and prepare an assessment of the current state of software and database platforms to facilitate a plan to implement industry best practices as they relate to data structures, data quality, database design and development, and data governance.

Status

The Technical Services Department underwent a reorganization effort to advance the departmental mission to regain trust in SANDAG data and analytics. This included the identification of specific skill sets in order to eliminate redundancies and reduce single points of failure (instances where a single individual/element is responsible, therefore increasing the probability of an error occurring). This effort led to the establishment of six Centers of Excellence: Program Management, Data Standards and Tools, QA/QC, Analytics, Visualization, and Transparency. These Centers have been developed to focus attention on opportunities for process improvements in the Department and throughout the agency, with a commitment to adopt best practices.

Staff also completed an initial assessment of the current state of software and database platforms within the Department. This effort has been expanded to standardize data software and technology agency-wide. Staff is evaluating the resources that will be needed to facilitate a plan to implement industry best practices and options to complete these tasks will be presented initially as part of the FY 2018 Program Budget development process.

KIM KAWADA
Chief Deputy Executive Director

Attachments: 1. February 24, 2017, Board of Directors Report

Key Staff Contact: Ray Major, (619) 595-5668, ray.major@sandag.org



AGENDA ITEM NO. 17-02-14

**BOARD OF DIRECTORS
FEBRUARY 24, 2017**

**ACTION REQUESTED – DISCUSSION/POSSIBLE
ACTION**

PROPOSED SANDAG DATA ACCURACY AND MODELING WORK PLAN

File Number 3100900

Introduction

The methodology used in the SANDAG Demographic and Economic Forecasting Model (DEFM) currently is under review by SANDAG staff after errors were discovered in the model that inflated wage growth in certain economic sectors over time. Once the errors were discovered, it became clear that they resulted in higher than expected estimations of future taxable retail sales, which in turn have affected the revenue forecasts for future *TransNet* Extension funds and Measure A. (Those revenue forecasts were calculated separately from DEFM but used taxable retail sales data from the model.) As was reported to the Board of Directors at its meeting on December 16, 2016, while DEFM is being updated staff has temporarily substituted in a different forecast model using an alternative methodology to estimate future *TransNet* revenue. The new estimate is arrived at using a consensus of three nationally recognized, independent forecasts.

This report details a recommended work plan that will fully investigate the cause of the errors in DEFM, how and when staff identified the errors, what impacts the errors have had on work products, and how those impacts will be addressed. The proposed work plan also calls for the development of processes and safeguards for consideration by the Board of Directors that can be put in place to ensure similar problems do not occur again, as well as provide transparency to issues of concern that may arise in the future.

Discussion

SANDAG uses a variety of forecasting tools to make estimates. The primary role of DEFM is to forecast future population, jobs, and housing in the region. The model, which originally was created in the 1970s and continually has undergone minor updates since then, is used to make a new forecast ahead of the creation of each Regional Transportation Plan (RTP). These forecasts are done in a series, with the most recent being Series 13, and the next in line being Series 14. The Board of Directors adopts each forecast as part of the process of reviewing and approving the RTP.

By its very nature, forecasting is extremely difficult and complex. A forecast is fundamentally an educated guess at what likely will occur. Minor changes to inputs into forecasting models may have

Recommendation

The Board of Directors is asked to provide feedback on the proposed work plan for strengthening accuracy, quality, and transparency in SANDAG data, analytics, and modeling programs.

small impacts in the near term, but dramatic impacts when calculations are made 30 or 40 years into the future.

Over the last few years, SANDAG has been engaged in a systematic process to comprehensively update its modeling capabilities. Because of the extremely complex nature of these computer models, the updates are expensive and time consuming. The first model to undergo an update was the Activity Based Model (ABM), which was completed in 2014. DEFM was next on the list. The Board of Directors included funds to start the initial work on this update in the FY 2015 Program Budget. That work is ongoing.

As part of the DEFM update, SANDAG staff planned to address an issue that they had noticed for some time – that the model was estimating the growth of future taxable retail sales in the region at a significantly higher rate in the future than actually had occurred in the past.

However, in October 2016 as election time approached, press reports challenged the validity of the \$18 billion revenue forecast for Measure A. At the direction of management, the modeling and economics teams started investigating DEFM. In November 2016, after weeks of work, staff identified the root cause and concluded that there was an error in the loading of data into DEFM that had caused industry output, and in turn taxable retail sales estimates, to be high. The taxable retail sales numbers had in fact been used in the process of calculating the Measure A revenue forecast, as well as financial capacity estimates used in the *TransNet* Plan of Finance.

SANDAG management and staff have taken several actions since then, including updating the Board of Directors on December 16, 2016. That update included an evaluation of the *TransNet* Program and a presentation on the new, independent forecast for future *TransNet* Extension revenue. In addition, the SANDAG Chief Economist position was consolidated with the Technical Services Director position to integrate oversight of forecasting processes.

Going forward, staff recommends the following seven-part work plan to investigate the error, identify the potential impacts, address any substantive problems that may have resulted with the agency's work products, and put in place policies and safeguards to ensure that similar problems do not occur again and that any concerns that may arise are brought to the attention of the Board.

- **Conduct Detailed Review:** Conduct a detailed review of the nature of the error in DEFM and its root cause. Review and validate input data, transformations, and equations in the Series 13 forecasting model (the most recent series completed using DEFM) to ensure accuracy of the data and integrity of the model results. Present this information to the Board of Directors.
- **Conduct Dependency Analysis:** Identify key SANDAG reports and deliverables that used data from Series 13. Evaluate the significance of the impacts from any potential forecasting errors and the potential effects on findings and policy recommendations.
- **Map Modeling Process Flow:** In preparation for future forecasts, map all data flow from source through databases, models, and outputs to provide transparency and identify areas for improved quality assurance processes. Complete online documentation and visual mapping of interactions in the model, showing all data sources, processes, interactions, and flows.

- **Improve Data Governance:** As a first step toward formal data governance, conduct interviews and document the customer-supplier relationship between SANDAG staff and the SANDAG Technical Services Department. This effort will lead to a better understanding of the type of data that agency staff request from Technical Services and a better understanding of how the data are requested, stored, used, and versioned. This information will be used to develop a data warehouse, standardize data extraction routines, and ensure consistency of data.
- **Review and Oversight:** Validate the new SANDAG population, housing, and economic forecasting model using an independent expert review committee, including convening a panel of experts in economics, demographics, and land use to review the methods, data sources, and assumptions of the new SANDAG forecasting model. The panel will evaluate the efficacy and sufficiency of the proposed Series 14 forecasting model to adequately forecast population, housing, and economic variables for SANDAG planning purposes.
- **Enhance Transparency:** Develop a set of agency methods and standards to ensure data and analytic transparency, including establishing checking points where full disclosure and analysis are provided to ensure that others can see how models were developed, how data was processed, and what assumptions were made along the way.
- **Develop and Formalize Processes:** Understand how staff roles, work flows, and technology (e.g., models, databases, software) contribute to producing key agency deliverables. This information will be used to realign the Technical Services Department, as well as add professional quality assurance staff and a dedicated database administrator. This effort will reduce single points of failure, and increase accountability, visibility, and efficiency. Conduct research and prepare an assessment of the current state of software and database platforms to facilitate a plan to implement industry best practices as they relate to data structures, data quality, database design and development, and database governance.

Next Steps

Upon receiving input and direction, SANDAG staff proposes to implement this work plan and follow up with ongoing progress reports to the Board of Directors and the *TransNet* Independent Taxpayer Oversight Committee. The implementation of this program may require additional staff and consultant resources. Upon direction from the Board, staff will return with proposed program budget amendments to support the work effort.

GARY L. GALLEGOS
Executive Director

Key Staff Contact: Ray Major, (619) 595-5668, ray.major@sandag.org