Financial Modeling and Forecasting Smart Practices
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**Smart Practices**
- Annual Forecasting Model – Key Elements
- Selecting Forecasting Techniques
- Alternative Scenarios – Global & Surgical
- Projecting Impacts on Fund Balances
- Monthly Forecasting & Variance Model
- Budget vs Actual Variance Analysis

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**Annual Forecasting Model – Key Elements**
1. Detailed historic financial, economic and statistical data (5-10 year minimum)
2. Forecast horizon, minimum 10 years
3. Forecast assumptions data input template
4. Pro forma financial summary and metrics
5. Charts, Graphs and Tables depicting historic trends, key ratios and future projections
6. Interactive ability to test alternative forecast assumptions, budget options and adjust timeline (starting and ending dates)
Selecting Forecasting Techniques - Revenues

1. Deterministic/Econometric Examples
   a) Change in assessed valuation and rates for property taxes
   b) Change in business activity and rates for sales taxes
   c) Consumption and use patterns, rates & fees for services
   d) Population and CPI change impacting recurring revenues such as fines & forfeitures, licenses & permits, etc.
   e) Interest rates applied to projected cash balances

2. Expert Judgment Examples
   a) Intergovernmental revenues
   b) Differentiating recurring and non-recurring revenue sources

Example – Property Tax Forecast

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<td>PROPERTY EXPENSES (B)</td>
<td>4,000,000</td>
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<td>REVENUE (A)</td>
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<td>PROPERTY / REVENUE (%)</td>
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Example – Sales Tax Forecast
Statutory Revenue Constraints – Gann Example

Trend and Correlation Analysis

• Analyze trend in recurring revenues – determine annual growth rate by revenue type, and other key metrics such as per capita and % of total revenue measurements.
• Identify recurring and non-recurring factors impacting revenue growth.
• Analyze relationships between major variables such as, property and sales tax revenues compared with residential and commercial development, economic cycles, population growth, etc.

Trend Analysis - Ex: Property Tax, % Annual Change

Correlation Analysis – Sales Taxes Nominal, Per Capita and CPI
Forecasting Techniques - Expenditures

1. **Deterministic Examples**
   a) Salaries and Benefits based on FTE positions
   b) Compensation factors related to collective bargaining
   c) Variable costs tied to personnel
   d) Costs as a function of revenues and service levels

2. **Liabilities and Fixed Costs**
   a) Debt service/lease/contractual obligations
   b) Capital improvement program commitments
   c) Internal loans and interfund transfers

Preparing the Baseline Forecast

- Collect historic revenue data for trend analysis (minimum 5-10 years — the more data the better for trend and correlation analysis).
- Identify key indicators and revenue drivers and collect relevant historic data.
- Determine level of detail to forecast, i.e. individual or grouped accounts.

Imbalances and Gap Analysis

- Multi-year forecasts reveal possible structural deficits that may not be apparent in short-range financial plans.
- Projected negative imbalances between revenue and spending can be addressed more proactively with creation of alternative strategies for increasing resources and/or decreasing spending **BEFORE** a crisis erupts.
Establish Alternative Scenarios

• Baseline Scenario – aka Most Likely or Expected Scenario
• Favorable or “Best Case” Scenario
• Unfavorable or “Worst Case” Scenario

Note: “Favorable” and “Unfavorable” labels imply one of a numerous range of possible scenarios rather than only two alternative future possibilities. Other labels could be “High Growth” and “Low Growth” scenarios.
**Sensitivity Analysis – Ex. Higher Sales Taxes & Users Fees**

**Capital & Debt Scenarios**

**Baseline Scenario:**
Capital and debt expenditures based on existing commitment, resource and service levels.

**Alternative Scenarios:**
Can include a menu of scenarios pertaining to capital projects and possible funding mechanisms such as pay-as-you-go, debt, intergovernmental and/or other fund sources.
Fund Balance Forecasting

- Analyze historic fund balances and reserves and include in forecasting model.
- Establish fund balance policy, usually based on a minimum % of annual appropriations which varies with the organization’s size and life cycle (eg. common % threshold among municipalities is 10-20%).
- Model should include projected sources and uses of funds and a resulting range of fund balances, based on the selected revenue and spending scenario.


Sensitivity Analysis – Ex. Unreserved Fund Balance 2017

Monthly Forecasting & Variance Analysis Model

1. Detailed historic monthly financial data (24-36 months minimum)
2. Mechanism for monthly allocation of annual budget
3. Ability to readily download monthly actual revenues & expenditures
4. Monthly forecasting and revision of year-end estimate
5. Charts, Graphs and Tables depicting budget vs. actual and variances on a monthly, year-to-date, YTD vs. prior year basis, and annual budget vs. year-end estimate
Monthly Variance Charts

Variance and YTD Tables

Break for Excel Demonstration and Conclusion