

Modeling the Impact of Tax Reform in Philadelphia

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Introduction

Econsult Solutions Inc. (ESI) has been asked by the Central Philadelphia Development Corporation (CPDC) to estimate the impacts of the City tax reform proposal put forth by the Philadelphia Growth Coalition on tax revenues, economic growth and employment within the City of Philadelphia over the next decade (FY 2017-2026). The analysis below details ESI's methodology for modeling the impact of the proposed tax changes, compares it to several other scenarios and presents its implications both for the City's operating budget and for job growth in Philadelphia.

ESI finds that the Growth Coalition's tax change proposal produces more tax revenues over the first five years than the City's most recent Five-Year Plan (it is "revenue positive") and it remains slightly revenue-positive over a ten-year timetable, despite a sustained schedule of tax reduction. Most important, this analysis indicates that the Growth Coalition proposal will stimulate significantly more job creation and economic activity within Philadelphia than the City's most recent Five-Year Plan, and generates significant incremental revenues for the School District by encouraging property value growth.

ESI's Modeling Approach

As part of its work on the City of Philadelphia's 2003 Tax Reform Commission, ESI conducted an econometric analysis on the long-term relationships between Philadelphia's tax structure, its economy and its revenues. This model was updated most recently in 2013 and further refined for this analysis to establish the degree to which changes in tax rates have led to growth or contraction in jobs, business activity and real estate demand, all of which result in declining or expanding tax bases.¹

ESI has analyzed both the magnitude of impact of tax rate changes on tax bases (wage, real estate and business income and receipts), as well as the lag in time between when tax changes are made and when the economy responds to those changes. Results reflect not only the impact of tax rate changes on their own tax base (i.e. wage tax rate changes on wage tax base) but also the impact of rate changes on other bases (i.e. wage tax rate changes on property tax base) and on employment (i.e. wage tax rate changes on jobs). This underscores the fact that municipal taxation is not simply a means of raising revenue, but also an expression of public choices and public policy. The type of taxes that a city chooses to implement directly impact its growth prospects: raising some taxes can discourage certain activities, just as lowering some taxes can make it easier for activities and investments to occur.² This is particularly true in regions with multiple municipalities with multiple tax rates where residents and businesses can choose to be in

¹ *Tax rates* are city policy legislated each year by City Council and the mayor, while *tax bases* are the economic activity or value to which those rates are applied. Tax bases include the total volume of salaries paid, total assessed value of real estate and total volume of business revenues. As explained throughout this analysis, tax rates impact household and business decisions, which result in changes to tax bases.

² So-called "sin taxes" are an extreme example of taxation as an expression of public policy. High rates are imposed on activities that a city seeks to discourage. Historically, Philadelphia has also exempted certain types and sizes of businesses, as well as specific geographic areas, in order to encourage economic growth.

different places within the metro area and still access the jobs and amenities of the region.³ Economic theory and observed results both suggest that to remain competitive within their regions municipalities should seek a broad enough tax base and even-handed approach to tax rates for all types of businesses and all for all parts of the city so that local government can raise sufficient revenues to support services without overly discouraging the private economic activity that generates those revenues.

Model Inputs

ESI's econometric analysis has been updated to include data and observed relationships over more than a half century in the life of Philadelphia, 1959 to 2013. Model inputs include:

- Local and national statistics on wages, property, sales and jobs
- Historical tax rates, bases and revenues
- Literature review of tax rate/base/revenue relationships
- Proposed future tax rate scenarios (discussed in more detail below)

This data allows for an examination of how Philadelphia's economy has trended up or down in relationship to the national economy and how local tax policy may have impacted those trends. Econometric analysis is performed to understand the relationships between tax rates and economic performance, accounting for these external factors.

It is also important to establish a "baseline" within the model for how local employment and tax bases might perform in the coming decade absent any change in tax rates. This baseline provides a comparison point against which the impact of rate changes, such as those proposed by the Growth Coalition, can be properly understood.

- Baseline assumptions for the real estate tax base⁴ and BIRT tax base⁵ are taken from City projections published in the recent FY 2016-2020 Five-Year plan, with projected growth rates for FY 2020 extended out over remainder of the time period modeled.

³ People and capital are generally considered to be highly *mobile* relative to more fixed *immobile* physical assets like land and structures. The more mobile a tax base, the more it is able to react to tax policy changes (either positive or negative). This is particularly relevant as the economy becomes increasingly service based and dependent on human talent.

⁴ City projections for real estate base growth do not differentiate between commercial and residential tax bases, which are currently taxed at the same rate. However, data from the Office of Property Assessment indicates non-residential property represents a greater proportion of temporarily abated property than it represents in taxable value. Since formerly abated properties contribute to tax base growth, this differential ratio is accounted for in the baseline tax base growth projection.

⁵ These projections incorporate the implementation of changes to the BIRT tax passed by City Council in FY 2012. These include a phased in exemption on the first \$100,000 of gross receipts and the implementation of single sales factor apportionment for determining BIRT liability. These changes can be characterized either as lowering the effective tax rate or lowering the tax base; ESI's model follows the City's approach of incorporating the implications into the baseline annual tax base growth. As a result, the implications of this tax reduction are not included in the dynamic economic effects modeled within this analysis.

- ESI's baseline assumption is that employment in Philadelphia will be flat over the next decade, absent any changes in policy.⁶ The City's wage tax base projections from the Five-Year plan, which include a combination of annual growth in the number of jobs and in salaries have thus been replaced with a 3% annual growth rate, which is attributable entirely to salary growth at the existing level of employment.⁷

Lag Effects and Cross-Base Effects

Analysis of the historical data since 1959 shows statistically significant impacts of tax rate changes on tax bases. Put differently, the analysis shows that decisions made by the municipal government about tax rates caused economic activity in the city to vary from broader national and regional economic trends. These impacts can be characterized not only in terms of their magnitude, but in terms of the timing with which the impacts take place in the economy. ESI's model uses this historical data to determine lag effects for the three major taxes, detailed below, that are proposed to be changed within the Growth Coalition's plan. In addition, historical evidence suggests that tax rate changes have implications not only for their own bases, but for other City tax bases, as well as for employment. For example, if a wage tax differential between the city and surrounding suburbs induces both employees and employers to leave the city, it reduces not only jobs in the city, and thus the wage tax base, but also the demand for real estate, resulting in a decline in property values and thus a decline in the real estate tax base.

Tax base lags and cross-base effects for each major tax addressed by the Growth Coalition proposal are observed and modeled as follows:

- *Wage Tax:* Historic data show that changes in the wage tax rate have an immediate impact on wage tax base and on employment in the year in which changes are implemented, and continue to show effects for four subsequent years, with impacts distributed relatively evenly across the five year span. This lagged effect is consistent with real-world patterns of implementation of economic decisions. While some firms or individuals may be able to change their behavior immediately in response to tax changes, many are constrained in the short-term by existing contractual obligations (between employees and employers, landlords and renters, suppliers and firms, etc.) that are renegotiated or revisited periodically. Therefore, it is not surprising that tax reductions continue to have economic effects several years after the year of implementation.⁸ Changes in wage tax rates are also observed to impact employment levels in the year they are implemented and in the following year, as well as the property tax base in the following year.

⁶ This assumption is more conservative than the approximately 1% annual growth in city employment that is projected by the City's economic forecasting firm, IHS, which is based largely on national and regional trends. It is more consistent, however, with the actual performance of the City economy over the past decade, which has seen employment level off after decades of decline and establish a relative equilibrium at the current level. While Philadelphia's job count has grown slightly in the post-recession years, total wage and salary employment in the City is virtually identical in 2013 (695,000) to what it was in 2003 (698,000) and still lower than in 1990.

⁷ Because wage tax growth is the product of growth in the level of employment and growth in wages per employee, this adjustment is necessary to make baseline wage tax base projections internally consistent with baseline employment projections.

⁸ Note that these impacts are cumulative, such that if the wage tax rate is reduced for five consecutive years, economic effects in the fifth year include impacts from the reductions in the current year as well as lagged impacts from the reductions in each of the previous four years.

- **BIRT - Net Income Tax:** Sufficient historical information is not available to estimate impacts from rate changes in the net income portion of the BIRT, independent of the gross receipts portion. Specifically, there have been too few instances of changes in the net income tax to measure an economic response to changes in the tax rate. Therefore, a literature review of national evidence was undertaken to produce a conservative elasticity⁹ estimate of the impact of changes in the net income tax rate on the BIRT tax base, as well as its impact on the wage tax base, and on employment (which is estimated to be proportionate to the wage tax base change).
 - Net income tax rates also impact revenues collected under the net profits tax because many proprietors are subject to both taxes on their business income, and are able to credit net income tax payments towards their net profits liability.¹⁰ The effects of this adjustment are accounted for within the model, both in terms of its dynamic impact on business activity and in terms of tax revenue impacts.
 - It should also be noted that impacts were observed historically from changes to the rate of the gross receipts portion of the BIRT on the BIRT base, the wage tax base and the employment level. However, none of the proposals modeled in this analysis include proposed changes to the current gross receipts tax rate. Therefore, gross receipts impacts are excluded from regression analysis within the current econometric calculation.
- **Real Estate Tax:** Historic data show that real estate tax rate changes have immediate impacts on the property tax base. No statistically significant impacts on employment or other tax bases are observed from changes in real estate tax rates.
 - Crucially, the real estate tax base functions differently than other tax bases in response to tax policy changes. Commercial property values reflect the sum of multi-year cash flows that result from multi-year leases, while residential property values similarly represent all future expected value from the asset. This differentiates the real estate tax base from the wage or income tax bases, which are the sum of economic activity in a single year. Property values therefore respond not only to market and tax policy conditions in the current year, but also to future expectations of market and tax policy conditions.¹¹ Therefore, if the City enacts a mandated multi-year schedule of tax rate changes, as is proposed by the Growth Coalition, actors within the real estate market, who might be considering five or ten year leases, would rightly consider not just the rates enacted for year one, but also the full tax schedule as

⁹ “Elasticity” refers to how sensitive demand for something is relative to its price. Products or services that are less sensitive to changes in price have demand that is “inelastic.” For example families with children are likely to continue to buy the same amount of milk regardless of whether it increases in price (within reason), but might be highly sensitive to the price of airline tickets for a vacation. With respect to a tax, elasticity measures the magnitude of the impact that changes to the tax rate have on private market activity – the greater the elasticity, the greater the impact.

¹⁰ Proprietors subject to both taxes can apply a 60% credit for net income tax towards their net profits liability. Under current policy, 60% of the net income tax rate exceeds the net profits tax rate, meaning that this credit erases the entire net profits liability for many taxpayers. However, as the net income tax is lowered under the Growth Coalition proposal, the value of that credit would decrease. This means that the changes in net income tax rates under this proposal are not realized in full in the effective tax rate of business owners subject to both taxes, which is reflected within the model in both the revenue streams and the dynamic effects.

¹¹ This is reflected in assessment practices as well. While residential properties are assessed on the basis of comparable sales, commercial property assessment also applies an *income approach to value*: looking both at the long-term revenue from executed leases and occupancy rates within buildings.

- relevant to the current value of real estate within the city.¹² Year one property value impacts are therefore calculated within the model as the sum of annual base changes due to rate changes over the ten year schedule, with effects in future years discounted to their net present value. This approach incorporates expectations about the future effects of tax policy into property values immediately upon implementation, with growth following the baseline trend after year one, without impacts from tax policy changes in those years, because the expectation of those changes has already been incorporated into real estate values at the time the changes were adopted. However, while market-based property values would be expected to adapt in the manner described above, assessed property values that comprise the City's real estate tax base may react more slowly, due to the mechanics of the property assessment process. In recognition of these realities, anticipated property value changes due to tax policy have been conservatively modeled to phase in over five years.¹³
- In the context of this analysis, it is also important to note that the historical relationship established between property tax rates and base are by necessity informed by consistent changes in the past to both the commercial and residential real estate tax rates, since those rates have been uniform by law. ESI's analysis of the Growth Coalition's proposal to increase commercial tax rates without increasing residential rates therefore applies observed impacts from previous changes in total property tax rate to the commercial property tax base only, leaving the residential property tax base unaffected.

The tax types described above represented 83% of tax collections for the City of Philadelphia in FY 2014. There are additional tax revenue streams that are outside the scope of the Growth Coalition proposal in terms of the rate, but for which the tax bases, and therefore revenue collection, is likely to be impacted by economic activity spurred or discouraged by changes in tax policy. Notable among these are the sales, parking, and real estate transfer taxes, which together made up 16% of the remaining 17% of FY 2014 tax collections. Tax bases for sales and parking tax generally track with trends in economic activity, and thus are modeled to grow at a corresponding rate with the wage tax base, while the real property transfer tax base is dependent on the market value for which properties are sold, and is thus modeled to grow at a corresponding rate with the property tax base. The ESI model therefore incorporates all major tax types, accounting for 99% of tax revenue sources for the City in total. Proposed changes in tax policy may also impact revenue collected by the School District of Philadelphia, which receives City property tax as its largest funding source. Anticipated impacts with respect to District revenues are discussed near the conclusion of this analysis.

¹² This tax effect explains why rental rates within Keystone Opportunity Improvement Zones are usually higher than in other areas. Not only are the buildings newer, when tenants negotiate leases, they can count on reduced future occupancy costs because of guaranteed, lower city and state taxes.

¹³ See Appendix A for a more detailed description of this equation and approach.

Scenarios Modeled

All projections about the future, including those in the City's Five-Year plan, have to make assumptions about how the national and regional economy will perform and how decisions made in Philadelphia might impact those trends within city limits. The Growth Coalition's ten-year tax reform proposal was modeled along with two different baseline scenarios to provide a framework within which to evaluate the impact of the proposal. While the Growth Coalition's proposal provides a ten-year schedule of rate changes, the City of Philadelphia does not currently legislate tax rates on more than an annual basis.¹⁴ The City does, however, produce a required Five-Year Plan that shows projected rates for five years. Baseline projections were thus produced using the future rate schedule from the approved FY 2016 - 2020 Five-Year Plan, projected out over ten years,¹⁵ with two different economic impact assumptions (detailed below).

It is important to highlight two major variables that were considered in developing scenarios:

Legislated future rates vs. projected future rates

Tax policy for future years can be authorized by legislation, as was done in Philadelphia in the mid-1990s, when City Council and the Mayor approved multi-year rate reductions that automatically went into effect unless Council took specific countervailing action. Alternatively, tax rates can be authorized on an annual basis, as has been done in Philadelphia since the recent recession led to the suspension of a 12-year program of steady wage and business tax reduction that had commenced in 1996. Currently, future tax rates listed in the City's Five-Year plan for years two through five are largely aspirational – they represent a vision for future City policy, but they are neither mandated nor do they provide individuals or businesses with any certainty on which to base future economic decisions.

Further, in recent years, the Five-Year plans have included very modest wage tax relief for the upcoming year coupled with aggressive tax rate reductions shown in years four and five of the Five-Year plan, changes which typically have become more modest when those future years become current years. To adjust for this effect, the baseline model takes the tax rates proposed in the City's FY 2016 - 2020 Five-Year plan, creates a five-year average change from the FY 2016 - 2020 rate schedule, and then applies this average change to each subsequent year from 2021 to 2026, rather than applying the proposed changes in year five uniformly through 2026.

Static vs. dynamic impact assumptions

When the City of Philadelphia's Finance Department projects future annual revenue in its Five-Year plan, it bases these projections on a *static growth* model of the economy. The City relies on an economic forecasting firm (IHS Global Insight) to project job and wage rate trends for the city and region, based only on trends in the overall economy and how it expects Philadelphia to perform in this context (i.e. expected wage and employment annual growth percentages). These are the sole variables that the City Finance Department recognizes as having an impact on the City tax bases in its budgeting process,

¹⁴ One exception is the BIRT tax, which is currently legislated to decline slightly (via the net income portion) through 2023.

¹⁵ With the exception of the BIRT rate, for which the legislated schedule is used (with a stable rate after 2023).

which represents a conservative approach to budgeting that may be at variance with the city’s own policy approach in other contexts.¹⁶

ESI’s research and modeling, as well as work done by Wharton’s Robert Inman, demonstrate that reductions or increases in tax rates have a direct impact on personal and business decisions that clearly have a *dynamic* impact on the city economy, and thus its tax bases. In this sense, tax policy can be thought of as having impacts similar to those of infrastructure investment or real estate development, producing ripple effects through adjacent areas and the broader economy.¹⁷

Therefore, tax revenue baselines under the City’s Five-Year plan are modeled both statically and dynamically. The static scenario reflects the approach to long-term financial planning taken by the City Finance Department, meaning that it reflects the revenue estimated based on legislated or projected tax rates and the City’s estimation of reasonable future rates of growth of tax bases, not taking into account any anticipated economic impact from changes in tax rates.¹⁸ ESI has also modeled the City’s Five-Year plan under a dynamic scenario, incorporating the full range of economic effects expected to occur as a result of the impacts of tax rate changes on tax bases. The Growth Coalition proposal is modeled under dynamic assumptions (see Table 1).

Appendix B provides a full rate schedule for each of the scenarios from FY 2016 - 2026.

TABLE 1: TAX RATE SCENARIOS MODELED

Rates Modeled	Description	Impact Assumptions
City Five-Year Plan	FY 16-20 proposed rates from FY 16-20 Five-Year Plan, Rates from FY 2021-26 based on 16-20 avg. annual changes	Static
City Five-Year Plan	FY 16-20 proposed rates from FY 16-20 Five-Year Plan, Rates from FY 2021-26 based on 16-20 avg. annual changes	Dynamic
Growth Coalition Proposal	Rates FY 2017-2026 as proposed by Growth Coalition	Dynamic

¹⁶ For example, when the City’s Commerce Department communicated earlier this year about the impact of reductions in the Business Income and Receipts tax for smaller businesses, they wrote: “While costing the City about \$29 million up front, it is expected that the tax break will generate more money as businesses are able to hire more people, rent more properties and spend more money for equipment and supplies.” But such *dynamic* changes to behavior and other tax bases that may be stimulated by this City-approved BIRT reduction plan (more jobs, more occupied real estate, more wage tax revenue) are **not** factored into revenue projections by the Finance Department in the Five-Year plan.

¹⁷ It is also important to note that the model identifies negative dynamic consequences from tax rate increases, just as it identifies dynamic positive increases from tax rate reduction. In practice, this means that raising an additional dollar of revenue through a tax increase does not simply represent a shift of the same dollar from the private sector to the public sector, but has an additional cost in its dampening effect on private activity, which should be considered part of the “all-in” cost of a tax rate increase.

¹⁸ It should be noted that the City has sometimes made an exception to this general approach. For example, in the FY 2010-14 Five-Year Plan, the Finance Department did project a reduction in sales tax base associated with the increase in City sales tax rate from 1 to 2 percent.

Results

Table 2 below summarizes modeled results with respect to City tax revenues and employment over the next decade under the City Five-Year plan, modeled both statically and dynamically, and the Growth Coalition proposal. Tax revenues are shown in nominal dollars, meaning that annual values rise with inflation as well as real growth.

- Modeled statically, the averaged Five-Year Plan rates produce an estimated \$36.9 billion in revenue over ten years, with annual revenue increasing from \$3.24 billion in FY 2016 to an estimated \$4.09 billion in FY 2026. Revenue growth occurs due to inflation and normal growth in various tax bases, but employment is anticipated to remain flat. This conservative approach to modeling revenue collections aligns with the methodology used by the City Finance Department in preparing the Five-Year plan, and therefore can be thought of as fulfilling revenue levels that the City believes it requires to fund services moving forward.¹⁹
- Modeled dynamically, the averaged Five-Year plan rates produce an estimated \$37.6 billion in revenue over ten years, with annual revenue increasing from \$3.24 billion in FY 2016 to an estimated \$4.24 billion in FY 2026. Revenue growth occurs due to inflation and normal growth in various tax bases, as well as dynamic growth in tax bases due to the decreases in wage and net income tax rates proposed in the plan. Modest rate decreases are also modeled to lead to an increase in the city's employment base of 18,000.
- The Growth Coalition Plan is modeled to produce an estimated \$37.7 billion in revenue over ten years with annual revenue increasing from \$3.24 billion in FY 2016 to an estimated \$4.16 billion in FY 2026. Revenue growth occurs due to inflation and normal growth in various tax bases, as well as dynamic growth in tax bases due to the more aggressive decreases in wage and net income tax rates proposed by the Growth Coalition. These dynamic growth effects are estimated to lead to a total net employment increase of 79,000 jobs.

The Growth Coalition proposal is therefore modeled to be slightly revenue-positive relative to the Five-Year Plan, when modeled using the same assumptions.

TABLE 2: CITY TAX REVENUE SCENARIOS – MODELED RESULTS

Scenario	City Tax Revenue FY 2026 (\$M)	City Tax Revenue FY 2016 (\$M)	Net Tax Revenue FY 2016 – 26 (\$M)	Cumulative Tax Revenue FY 2017- 26 (\$M)	Net Employment FY 2016 -26 (jobs)
City Five-Year Plan (static)	4,088	3,237	851	36,839	0
City Five-Year Plan (dynamic)	4,238	3,237	1,001	37,651	18,000
Growth Coalition Proposal (dynamic)	4,164	3,237	927	37,721	79,000

¹⁹ Modeled revenues within this analysis rely on ESI's baseline economic assumption, which differ slightly from those employed by the City (as detailed in Section 5.2) and incorporate a ten-year rather than five-year time window.

Table 3 shows projected annual tax revenues for each year under all three scenarios.²⁰

- Relative to the static methodology employed by the City, the Growth Coalition Plan is estimated to net approximately \$90 million per year in additional revenue for the City over ten years.
- Relative to the dynamically modeled Five-Year Plan, the Growth Coalition plan is estimated to net approximately \$7 million per year in additional revenue for the City over ten years. Revenues are modeled to be significantly higher under the Growth Coalition proposal in the early years, generating an additional \$176 million in revenue over five years, in part because the increase in property tax occurs immediately, while cuts in wage and BIRT taxes are phased in over time. Starting in year eight, annual revenues are modeled to be higher under the Five-Year Plan because tax reduction is continuing at a greater rate in the Growth Coalition’s plan.²¹

TABLE 3: TOTAL CITY TAX REVENUE BY YEAR – SCENARIO COMPARISON (\$M)

FY	Annual City Revenue			Net Revenue vs. Growth Coalition Proposal	
	City Five-Year Plan (static)	City Five-Year Plan (dynamic)	Growth Coalition Proposal (dynamic)	GC (dynamic) vs. Five-Year Plan (static)	GC (dynamic) vs. Five-Year Plan (dynamic)
2016	3,237	3,237	3,237	0	0
2017	3,313	3,321	3,358	45	38
2018	3,408	3,427	3,444	36	17
2019	3,473	3,509	3,540	67	30
2020	3,538	3,594	3,640	102	47
2021	3,624	3,700	3,745	121	44
2022	3,712	3,804	3,831	119	28
2023	3,799	3,911	3,916	117	5
2024	3,894	4,020	4,000	106	(20)
2025	3,991	4,128	4,083	92	(45)
2026	4,088	4,238	4,164	76	(74)
Cum 17-26	36,839	37,651	37,721	890	70
Cum 17-21	17,356	17,551	17,727	373	176

²⁰ Note that this approach looks only at the revenue impacts of proposed rates, and does not evaluate the expenditure implications of employment increases, which may yield reductions in the level of City services required, particularly for social service costs. See further discussion under Additional Impacts.

²¹ While impacts have not been modeled beyond year ten, annual gaps between plans would be anticipated to shrink in the subsequent years, assuming stable tax policy, since tax rate reductions within the ten-year period have lagged dynamic impacts beyond the current year (see discussed in section 5.2).

Table 4 shows net revenue gains and losses by tax type over ten years for the Growth Coalition plan relative to the Five-Year Plan, both modeled dynamically.

- Wage and BIRT tax revenues decline significantly under the Growth Coalition Plan, due to the significantly higher rate cuts in those taxes relative to the Five-Year Plan. These cuts are offset to some extent, but not fully, by projected growth in the wage and BIRT tax bases due to dynamic effects from the tax reductions.
- Real estate tax revenues increase significantly under the Growth Coalition, due both to dynamic growth impacts of the wage and BIRT tax cuts and the increase in the commercial property tax rate. In addition, revenue from other taxes (sales, parking and real estate transfer) all increase due to the increases in economic activity resulting from the dynamic effects of the tax package. Finally, net profits tax liability would increase due to cuts in the net income tax (effectively offsetting a portion of lost BIRT revenue).

The net effect of these decreases and increases in various tax categories is modeled to be slightly revenue-positive over the ten year period.

**TABLE 4: CUMULATIVE TEN YEAR CITY REVENUE BY TAX TYPE –
GROWTH COALITION PROPOSAL VS. CITY FIVE-YEAR PLAN (\$M)**

Tax Type	Growth Coalition Proposal (dynamic)	City Five-Year Plan (dynamic)	GC Proposal vs 5 Year Plan
Wage	18,872	19,841	(968)
<i>Resident</i>	11,323	11,904	(581)
<i>Non-Resident</i>	7,549	7,936	(387)
BIRT	4,754	5,307	(552)
<i>Gross Receipts</i>	1,501	1,415	86
<i>Net Income</i>	3,253	3,891	(638)
Real Estate	7,895	6,789	1,106
<i>Residential</i>	4,335	4,127	207
<i>Commercial</i>	3,560	2,662	898
Additional Taxes	6,200	5,715	485
<i>Sales</i>	2,222	2,055	167
<i>Parking</i>	1,124	1,069	55
<i>RE Transfer</i>	2,688	2,591	97
<i>Reduction in NPT Credits</i>	166	0	165
TOTAL	37,721	37,651	70

Detailed year by year and tax by tax revenue projections for all three scenarios are shown in Appendix C.

Additional Impacts

It should also be noted that revenue-neutrality is not the sole standard by which a tax reform proposal can or should be judged. The challenges that the City faces are not solely fiscal, but are tied to the welfare of its citizens, particularly the elevated unemployment and poverty rates.²² Philadelphia lost more than a quarter of the jobs it held in 1970. Severe job loss has ended, but under the status quo little to no growth is projected. The Growth Coalition proposal is projected to result in 80,000 new jobs, a 10% increase in employment in Philadelphia over the next decade, which would have significant implications for the City's economy and the quality of life of its citizens. In addition, employment growth would lift more families out of poverty, which not only benefits those families, but also reduces a host of municipal costs that have been shown to be correlated with poverty levels, including social services, unemployment, public safety and criminal justice.²³ In addition, employment growth would have significant fiscal impacts for the City, reducing needed expenditure levels on social services and a host of additional expenditures associated with poverty and unemployment.²⁴ Therefore, the overall fiscal effect of a tax proposal is broader than its projected revenue implications alone, since policies that encourage economic growth may reduce the need for City expenditures and create more opportunities for its residents.

School District Property Tax Revenue

In addition to the City revenue and employment impacts shown above, School District property tax revenues are impacted both by growth in the real estate tax base, and in the case of the Growth Coalition proposal, an increase in the commercial real estate property tax rate. Under the Growth Coalition proposal, incremental revenues from the increase in the commercial property tax rate from 1.40% to 1.61% would be put first towards offsetting municipal government revenue decreases resulting from the program of steady cuts to the wage and net income taxes. Once sufficient incremental revenues from the commercial property tax increase have been collected to make those wage and business tax reductions revenue-neutral relative to the previous fiscal year, additional incremental revenues could be shared between the City and School District according to the normal property tax distribution (approximately 55% to the District and 45% to the City). The combination of growth in the real estate tax base and rate allocated to the School District is modeled to generate an additional \$362 million over ten years under the Growth Coalition proposal relative to the City's Five-Year plan (modeled dynamically). It should also be noted that additional tax revenues collected by the School District through levies such as use and occupancy tax, liquor tax, and school income tax, would likely grow due to the additional economic activity anticipated under the Growth Coalition plan.

²² Philadelphia's unemployment rate is estimated by the BLS at 7.1% as of March 2015, well above the national rate of 5.5%, and its poverty rate in 2013 is estimated at 26% by the U.S. Census Bureau, among the highest nationally among large cities.

²³ See: Summers and Jakubowski, "The Fiscal Burden of Unreimbursed Poverty Expenditures" (1997); Janet Rothenberg Pack, "Poverty and Urban Expenditures" (1998); Joassart-Marcelli, Musso and Wolch, "Fiscal Consequences of Concentrated Poverty in a Metropolitan Region" (2005).

Conclusion

ESI's econometric analysis of more than 50 years of data and relationships confirms the widely accepted economic premise that municipal tax policy impacts the decisions of both firms and employees in the private-sector economy in Philadelphia. From the perspective of the city government, tax rates represent more than just a mechanism for raising revenues. They are an expression of policy choices, encouraging certain activities and discouraging others, that ultimately have profound implications for the economic opportunity of citizens in addition to their implications for the municipal revenue streams that allow the city to provide needed public services.

The City's current conservative approach to forecasting, which disregards the impacts of tax rate changes on tax bases, is understandable in a world of budgeting. It is not, however, an appropriate framework for evaluating the economic development and job creation impacts of large scale tax reform proposals like the one advanced by the Growth Coalition. These impacts are not simply budgetary in nature, but instead are designed to address the long-term strategic needs of the City, and are thus best thought of within a long-term financial planning framework.²⁵

ESI's dynamic econometric model estimates that both the Growth Coalition proposal and Five-Year plan will result in economic growth, expanding tax bases to offset decreases in rates. The exact magnitude of that growth is of course uncertain, and small differences in projected growth rates greatly impact long-range revenue forecasts. ESI's model suggests that the Growth Coalition's proposal generates slightly more tax revenue than the Five-Year Plan over a ten-year time window. The model also projects the Growth Coalition plan to have a far greater impact on employment growth within the city than the Five-Year plan and to generate significant ongoing incremental revenue for the School District by stimulating growth in the real estate tax base.²⁶

Finally, it is important to recall that the City budget is driven not only by revenues but by expenditure needs, and further, that the aim of City policy is not merely fiscal balance but to improve opportunity and quality of life for its citizens. Increases in private sector economic activity and Philadelphia's job base are essential to addressing the elevated rates of poverty and unemployment that represent Philadelphia's greatest economic challenges. Improvements in economic opportunities will ultimately help to reduce the level of expenditures needed for the City, while enhancing the quality of life of its residents. Optimal city tax policy is therefore not driven by a single revenue target, but must seek to balance revenue and economic policy priorities through careful consideration of the impact of rates on the overall economy and on city residents.

²⁵ The Government Finance Officers Association, in fact, distinguishes clearly between the budget process and the long-term financial planning process. While budgets typically cover one year, a long-term financial plan typically has a time horizon from five to ten years, and "combines financial forecasting with financial strategizing to identify future challenges and opportunities, causes of fiscal imbalances, and strategies to secure financial sustainability." (Kavanaugh 2007).

²⁶ It is important to differentiate this analysis from the argument that tax cuts "pay for themselves" in all cases. Generally, increases in economic activity stimulated by tax cuts return only a portion of tax revenue forgone due to rate cuts. Two factors are crucial in enabling the ten-year tax mix proposed by the Growth Coalition to increase, rather than decrease, modeled tax revenues for the City. First, unlike tax changes made nationally, local tax changes impact the competitive relationships between municipalities as potential locations for businesses and residents. Second, the tax package proposed by the Growth Coalition includes an *increase* in the commercial real estate tax rate, in addition to the decreases in the wage and BIRT tax rates. It represents therefore not a straightforward tax rate cut but a shift in the tax mix, which has impacts on economic incentives and activity levels in addition to its direct revenue implications. The commercial real estate tax base is also uniquely suited to absorb the burden rate increases both because of its broad base and the sensitivity of property values to long-term expectations (as detailed on page 5 and in Appendix A).

APPENDIX A – Expectations-Based Model of Tax Change Impacts on the Real Estate Tax Base

As described within the analysis, modeling of the real estate tax base requires a unique approach due to the forward-looking nature of property values, which incorporate expectations of future tax policy changes into current values through market effects. The change in property values, and thus property tax base, modeled to occur in year one as a result of a ten year schedule to tax rate changes is described by the following equation²⁷:

$$\Delta V_1 = \sum_{t=110} \frac{1}{(1+r-g)^{t-1}} \left\{ \alpha_0 B_t^P (R_t^P - R_{t-1}^P) + \alpha_1 B_t^P (R_t^W - R_{t-1}^W) + \frac{\gamma b_t^{NI} (R_t^{NI} - R_{t-1}^{NI})}{r-g} \right\}$$

Where:

V = Philadelphia Property Value (\$)

r = Discount Rate

g = Growth Rate

t = Year

B^P = National Property Value (\$)

R^P = Real Estate Tax Rate

R^W = Wage Tax Rate (blended resident/non-resident rate)

b^{NI} = Philadelphia Net Income Tax Base

R^{NI} = Net Income Tax Rate

α_0 = Property Tax Rate to Property Tax Base Effect Coefficient²⁸

α_1 = Wage Tax Rate to Property Tax Base Effect Coefficient

γ = Percent of Net Income Tax Reduction Capitalized as Property Value

This equation calculates property values in year one of the multi-year schedule of rate changes (in this case FY 2017), incorporating adjustments in value based on expectations of future tax policy and growth rates. Property value growth for future years is then modeled to return to the baseline trend, which incorporates both inflation and expected real growth.

While this methodology is reflective of the process by which market-based property values are determined, the logistics of the property assessment process may cause gains to be realized more slowly for the City's property tax base. In order to produce a conservative accounting of City revenue gains from tax base growth, the model phases in the anticipated year one property value gains from tax policy change over a five year period. Mechanically, this calculation is performed by evenly distributing the incremental growth rate above the baseline trend across five years, rather than realizing gains in one year. After the five year phase in, results are identical to those described by the equation above.

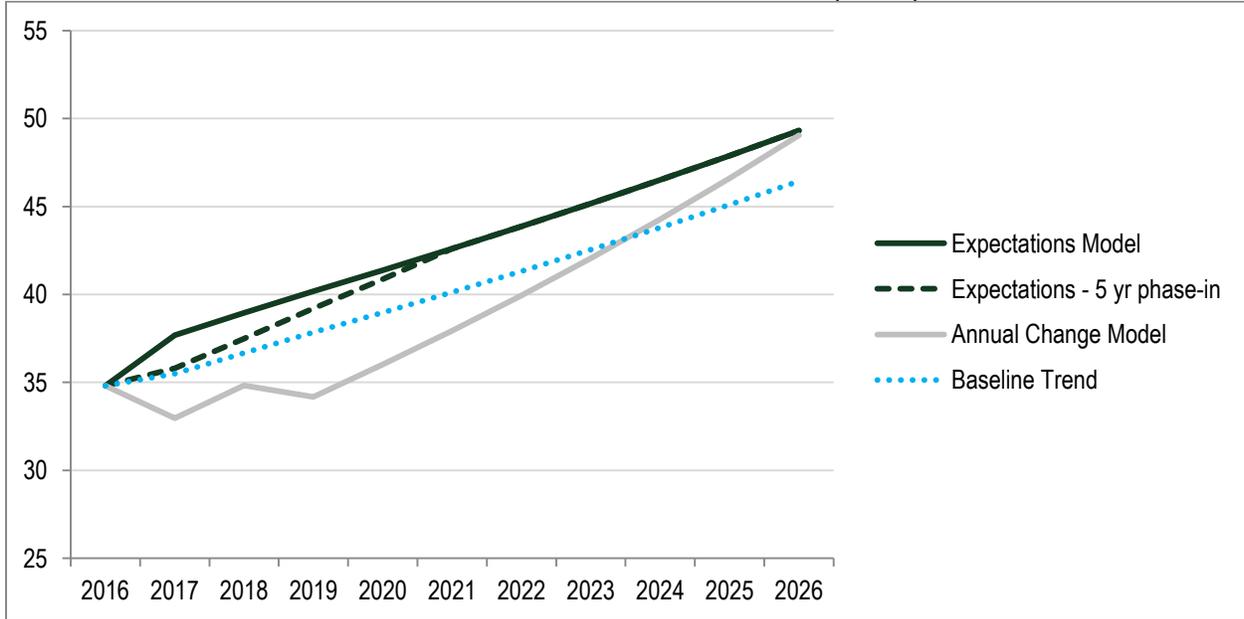
The graphs below shows the implications of utilizing this expectations-based approach on the modeled commercial and residential property value base under the Growth Coalition proposal. Year ten tax base

²⁷ This equation is used to independently model residential and commercial property values.

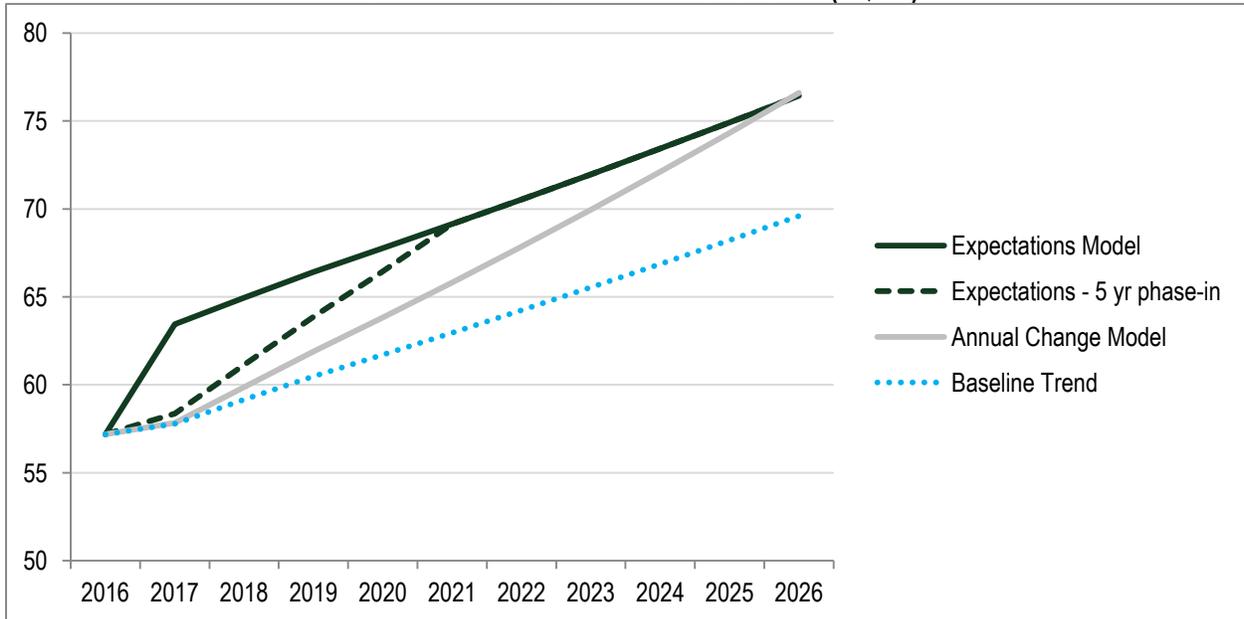
²⁸ To control for macroeconomic effects, property tax and wage tax effect coefficients are estimated in terms of national share (local tax base as a percent of national tax base).

estimates match under the expectations and annual change modeling approaches. However, the trajectories vary, since the expectations model assumes that the real estate market reacts to the full schedule of changes immediately (with appropriate discounting), while the annual change model implicitly assumes that market actors have no information on future policy beyond the current year. The “expectations – 5 year phase-in” trajectory (shown on the graphs as a dashed line) is utilized for the modeled revenue calculations within this analysis.

COMMERCIAL REAL ESTATE TAX BASE GROWTH (IN \$BIL)



RESIDENTIAL REAL ESTATE TAX BASE GROWTH (IN \$BIL)



APPENDIX B – Tax Rate Schedules Modeled

TAX RATE SCHEDULE - FY 2016 - 2020 CITY FIVE YEAR PLAN²⁹

FY	Wage Tax & NPT – Resident	Wage Tax & NPT – non Resident	Real Estate Tax³⁰ – Residential	Real Estate Tax - Commercial	BIRT – Gross Receipts	BIRT – Net Income
2016	3.9102%	3.4828%	1.3998%	1.3998%	0.1415%	6.3900%
2017	3.9004%	3.4741%	1.3998%	1.3998%	0.1415%	6.3500%
2018	3.8907%	3.4654%	1.3998%	1.3998%	0.1415%	6.3000%
2019	3.8129%	3.3961%	1.3998%	1.3998%	0.1415%	6.2500%
2020	3.7366%	3.3282%	1.3998%	1.3998%	0.1415%	6.2000%
2021	3.6999%	3.2955%	1.3998%	1.3998%	0.1415%	6.1500%
2022	3.6632%	3.2629%	1.3998%	1.3998%	0.1415%	6.1000%
2023	3.6266%	3.2302%	1.3998%	1.3998%	0.1415%	6.0000%
2024	3.5899%	3.1976%	1.3998%	1.3998%	0.1415%	6.0000%
2025	3.5532%	3.1649%	1.3998%	1.3998%	0.1415%	6.0000%
2026	3.5165%	3.1322%	1.3998%	1.3998%	0.1415%	6.0000%

²⁹ Rates from FY 2016 – 2020 are taken from the City's FY 2016- 2020 Five-Year Plan. The following assumptions are used to project rates from 2021 – 2026:

- Wage tax rates are modeled by applying the average annual change in rates from FY 2016 - 2020 to each subsequent year;
- Real Estate and BIRT - Gross Receipts tax rates are modeled to remain constant, since they are constant throughout the Five-Year Plan
- BIRT – Net Income tax rates are modeled according to the legislated schedule of reductions through FY 2023, with constant rates thereafter.

³⁰ Real estate tax rates are divided based on the current ratio of 0.6317% to the City and 0.7681% to the School District.

TAX RATE SCHEDULE - GROWTH COALITION PROPOSAL

FY	Wage Tax & NPT – Resident	Wage Tax & NPT – non Resident	Real Estate Tax – Residential³¹	Real Estate Tax - Commercial³²	BIRT – Gross Receipts	BIRT – Net Income
2016	3.9102%	3.4828%	1.3998%	1.3998%	0.1415%	6.3900%
2017	3.8192%	3.3845%	1.3998%	1.6098%	0.1415%	6.0510%
2018	3.7282%	3.2862%	1.3998%	1.6098%	0.1415%	5.7120%
2019	3.6371%	3.1880%	1.3998%	1.6098%	0.1415%	5.3730%
2020	3.5461%	3.0897%	1.3998%	1.6098%	0.1415%	5.0340%
2021	3.4551%	2.9914%	1.3998%	1.6098%	0.1415%	4.6950%
2022	3.3641%	2.8931%	1.3998%	1.6098%	0.1415%	4.3560%
2023	3.2731%	2.7948%	1.3998%	1.6098%	0.1415%	4.0170%
2024	3.1820%	2.6966%	1.3998%	1.6098%	0.1415%	3.6780%
2025	3.0910%	2.5983%	1.3998%	1.6098%	0.1415%	3.3390%
2026	3.0000%	2.5000%	1.3998%	1.6098%	0.1415%	3.0000%

³¹ Resident real estate tax rates are divided based on the current ratio of 0.6317% to the City and 0.7681% to the School District.

³² The increase in commercial real estate tax is first allocated to offsetting municipal government revenue decreases resulting from the program of steady cuts to the wage and net income taxes (meaning that the School District initially receives the same 0.7681% share). Once sufficient incremental revenues from the commercial property tax increase have been collected in a given year to make those wage and business tax reductions revenue-neutral relative to the previous fiscal year, additional incremental revenues are modeled to be shared between the City and School District according to the normal property tax distribution (approximately 55% to the District and 45% to the City). Therefore, the exact distribution varies by year and is calculated uniquely.

APPENDIX C – Tax Revenue Projections by Tax Type and Fiscal Year

**SCENARIO 1: ANNUAL TAX REVENUE (IN \$M) AND EMPLOYMENT PROJECTIONS
FY 2016 - 2020 CITY FIVE-YEAR PLAN (STATIC)**

Fiscal Year	Wage & Earnings: Resident	Wage & Earnings: Non-Res	Real Estate: Residential	Real Estate: Commercial	BIRT: Gross Receipts	BIRT: Net Income	Sales	Parking	Real Estate Transfer	Reduction in NPT Credits	Total Tax Revenue	Total Jobs ³³
2016	1,045	697	361	220	118	336	149	89	222	0	3,237	804,000
2017	1,074	716	365	224	121	340	157	91	225	0	3,313	804,000
2018	1,103	736	374	232	125	349	166	94	231	0	3,408	804,000
2019	1,114	742	382	239	129	359	174	97	237	0	3,473	804,000
2020	1,124	749	390	246	133	370	183	100	243	0	3,538	804,000
2021	1,147	764	398	253	137	381	192	103	249	0	3,624	804,000
2022	1,169	779	406	261	142	393	202	106	254	0	3,712	804,000
2023	1,192	795	414	269	146	402	211	109	261	0	3,799	804,000
2024	1,216	810	422	277	151	418	221	112	267	0	3,894	804,000
2025	1,239	826	431	285	156	433	232	115	273	0	3,991	804,000
2026	1,263	842	440	293	161	447	242	119	280	0	4,088	804,000
Net 16-26	218	145	78	74	43	111	93	30	58	0	851	0
Cum 17-26	11,641	7,761	4,021	2,579	644	3,891	1,981	1,045	2,519	0	36,839	

³³ Modeled jobs reflect all full-time and part-time jobs (private and public sector) as reported by the BEA. In addition to all wage and salary jobs (referenced in footnote 18), this figure include proprietors.

**SCENARIO 2: ANNUAL TAX REVENUE (IN \$M) AND EMPLOYMENT PROJECTIONS
FY 2016 - 2020 CITY FIVE-YEAR PLAN (DYNAMIC)**

Fiscal Year	Wage & Earnings: Resident	Wage & Earnings: Non-Res	Real Estate: Residential	Real Estate: Commercial	BIRT: Gross Receipts	BIRT: Net Income	Sales	Parking	Real Estate Transfer	Reduction in NPT Credits	Total Tax Revenue	Total Jobs
2016	1,045	697	361	220	118	336	149	89	222	0	3,237	804,000
2017	1,076	717	366	225	121	340	158	91	226	0	3,321	805,000
2018	1,107	738	378	235	125	349	167	94	234	0	3,427	806,000
2019	1,123	748	389	245	129	359	177	97	242	0	3,509	808,000
2020	1,139	759	400	254	134	370	187	101	250	0	3,594	812,000
2021	1,168	778	411	263	139	381	198	104	257	0	3,700	815,000
2022	1,197	798	419	271	143	393	209	108	264	0	3,804	817,000
2023	1,230	820	428	279	149	402	222	112	270	0	3,911	819,000
2024	1,259	839	436	288	153	418	233	116	276	0	4,020	820,000
2025	1,288	859	445	296	158	433	245	120	283	0	4,128	821,000
2026	1,318	879	454	305	163	447	258	124	290	0	4,238	822,000
Net 16-26	273	182	93	85	45	111	108	36	68	0	37,651	18,000
Cum 17-26	11,904	7,936	4,127	2,662	1,415	3,891	2,055	1,069	2,591	0	1,001	

**SCENARIO 3: ANNUAL TAX REVENUE (IN \$M) AND EMPLOYMENT PROJECTIONS
GROWTH COALITION PROPOSAL (DYNAMIC)**

Fiscal Year	Wage & Earnings: Resident	Wage & Earnings: Non-Res	Real Estate: Residential	Real Estate: Commercial	BIRT: Gross Receipts	BIRT: Net Income	Sales	Parking	Real Estate Transfer	Reduction in NPT Credits	Total Tax Revenue	Total Jobs
2016	1,045	697	361	220	118	336	149	89	222	0	3,237	804,000
2017	1,061	707	369	296	122	324	160	92	227	0	3,358	813,000
2018	1,076	717	386	309	128	321	172	96	238	3	3,444	821,000
2019	1,092	728	403	323	133	322	184	100	249	5	3,540	829,000
2020	1,108	739	420	337	139	328	198	104	259	9	3,640	837,000
2021	1,126	751	437	352	145	331	212	109	269	12	3,745	845,000
2022	1,143	762	446	364	152	332	227	114	276	16	3,831	853,000
2023	1,159	773	455	376	159	331	242	119	282	21	3,916	861,000
2024	1,173	782	464	388	166	328	259	124	289	27	4,000	868,000
2025	1,187	791	473	401	174	323	275	130	296	33	4,083	876,000
2026	1,199	799	483	415	182	315	293	136	303	40	4,164	883,000
Net 16-26	153	102	122	195	64	(20)	143	47	81	40	927	79,000
Cum 17-26	11,323	7,549	4,335	3,560	1,501	3,253	2,222	1,124	2,688	166	37,721	