



2014

Three Year Strategic Plan for the Urban Forestry Consultants and School of Arboriculture

Andrew Kirkpatrick
University of Pennsylvania

Follow this and additional works at: https://repository.upenn.edu/morrisarboretum_internreports

 Part of the [Forest Management Commons](#), and the [Horticulture Commons](#)

Recommended Citation

Kirkpatrick, Andrew, "Three Year Strategic Plan for the Urban Forestry Consultants and School of Arboriculture" (2014). *Internship Program Reports*. 36.
https://repository.upenn.edu/morrisarboretum_internreports/36

An independent study project report by The Martha S. Miller Endowed Urban Forestry Intern (2013-2014)

This paper is posted at ScholarlyCommons. https://repository.upenn.edu/morrisarboretum_internreports/36
For more information, please contact repository@pobox.upenn.edu.

Three Year Strategic Plan for the Urban Forestry Consultants and School of Arboriculture

Abstract

This project's goal was to develop an actionable three year strategic plan for Morris Arboretum's Urban Forestry Consultants and the School of Arboriculture. The strategic plan explores ways to increase net revenue and raise the profile of both entities in the region as a resource for urban forestry and arboriculture and considers Morris Arboretum's vision and mission and how the entities support it. The methodology included reviewing three years of historical time and billing data to establish a baseline from which trends could be derived.

Analysis of the past three fiscal years for the Urban Forestry Consultants reveals that revenue has been supported by grant funding from the William Penn Foundation which came to an end in Fiscal Year 14, the current fiscal year. Therefore, next year there will be a gap in revenue which will need to be addressed either with new grant funding or increased billable time for contracted projects. Large-scale projects like the Princeton Borough tree inventory completed in FY13 produced the most net revenue for project hours invested. Pursuing more large-scale projects will be integral for maintaining revenue streams for the Urban Forestry Consultants as well as ensuring that hourly billing rates remain competitive.

On average the School of Arboriculture has been breaking even for the last three fiscal years, unless indirect expenses are considered. When indirect expenses, salary and benefits expenses for support from the education department are factored into calculating performance, the picture begins to change; trends show that the school has been operating on a small deficit. The deficit increases when the loss of Tree Risk Assessment Certification (TRACE) training is factored in for coming years. The School of Arboriculture needs to consider the true costs of operations when planning future course offerings to ensure that expenses balance with gross revenue.

Disciplines

Forest Management | Horticulture

Comments

An independent study project report by The Martha S. Miller Endowed Urban Forestry Intern (2013-2014)

Title: Three Year Strategic Plan for the Urban Forestry Consultants and School of Arboriculture

Author: Andrew J. Kirkpatrick
The Martha S. Miller Endowed Urban Forestry Intern

Date: February 2014

Abstract:

This project's goal was to develop an actionable three year strategic plan for Morris Arboretum's Urban Forestry Consultants and the School of Arboriculture. The strategic plan explores ways to increase net revenue and raise the profile of both entities in the region as a resource for urban forestry and arboriculture and considers Morris Arboretum's vision and mission and how the entities support it. The methodology included reviewing three years of historical time and billing data to establish a baseline from which trends could be derived.

Analysis of the past three fiscal years for the Urban Forestry Consultants reveals that revenue has been supported by grant funding from the William Penn Foundation which came to an end in Fiscal Year 14, the current fiscal year. Therefore, next year there will be a gap in revenue which will need to be addressed either with new grant funding or increased billable time for contracted projects. Large-scale projects like the Princeton Borough tree inventory completed in FY13 produced the most net revenue for project hours invested. Pursuing more large-scale projects will be integral for maintaining revenue streams for the Urban Forestry Consultants as well as ensuring that hourly billing rates remain competitive.

On average the School of Arboriculture has been breaking even for the last three fiscal years, unless indirect expenses are considered. When indirect expenses, salary and benefits expenses for support from the education department are factored into calculating performance, the picture begins to change; trends show that the school has been operating on a small deficit. The deficit increases when the loss of Tree Risk Assessment Certification (TRACE) training is factored in for coming years. The School of Arboriculture needs to consider the true costs of operations when planning future course offerings to ensure that expenses balance with gross revenue.

TABLE OF CONTENTS

INTRODUCTION	2
METHODOLOGY	2
FINDINGS & ANALYSIS.....	3
FORECASTS.....	4
RECOMMENDATIONS.....	5
DISCUSSION.....	8
FIGURES	10

Figure 1: Annual Staff Effort Hours.

Figure 2: Urban Forestry Consultants Revenue vs. Expense.

Figure 3: School of Arboriculture Revenue vs. Expense.

Figure 4: Client Analysis of Gross Revenue FY11-13

INTRODUCTION

The Urban Forestry (UF) Consultants and the School of Arboriculture (School) at the University of Pennsylvania's Morris Arboretum provide non-profit arboricultural services, education and training in the Philadelphia region. The mission of the Morris Arboretum is *to promote an understanding of the relationship between plants, people, and place through programs that integrate science, art, and the humanities*. The Arboretum conducts four major activities: education, research, outreach, and horticultural display. The Arboretum provides research and outreach services to state agencies, community institutions, and to citizens of Pennsylvania and beyond. The UF Consultants and School of Arboriculture support the outreach and educational missions of the Arboretum.

The vision for the UF Consultants is to be the premier arboricultural consultants in the Philadelphia metro region and for the School of Arboriculture to become a leading regional resource for professional development in the fields of urban forestry and arboriculture. The mission of the UF Consultants is to provide expert arboricultural consulting services and advise clients to use best management practices for the care, maintenance, and budgeting of natural resources. The mission of the School of Arboriculture is to provide the highest quality educational experience and resource possible for arborists, landscape architects, contractors, and horticultural professionals in the greater Philadelphia area. In support of those missions, the goals are two-fold, 1) *To develop a sustainable operation that explores ways to produce more net revenue than today* and 2) *To raise awareness of the Arboretum as a regional resource for urban forestry and arboricultural training and education*. The following strategic plan develops objectives to achieve these goals.

METHODOLOGY

The primary goal of this project was to guide future efforts by identifying how time has been spent in relation to revenue generated. Employee time in terms of billable hours by project was the focus. Expenses that were billed to clients were not included in calculations of revenue generated by billable hours. However, billed expenses were included in aggregated revenue amounts for forecasting coming fiscal years.

To determine financial and project trends for the Urban Forestry Consultants, I began with matching invoices from the last three fiscal years 2011-13 to entries in the universal timesheet, which is an Excel spreadsheet used for recording time, expense, and billing rate by employee and project. The universal timesheet has been used to varying degrees over the past several years to record hourly project time. Fiscal Year 2013 was the most accurate in recording time, so where no entries were available on the universal timesheet I estimated the project hours based on the line items from project invoices recorded in Quickbooks accounting software.

Completed projects billed in separate fiscal years were included in the year the work was completed, and not necessarily when payment was received. This skews my results from previously reported FY accounting amounts. The primary example of this is the Princeton Borough tree inventory which was completed in FY13, but not billed and payment received until

FY14; therefore, it was included in FY13 for the purposes of this project. This directly impacts the projected revenue for FY14 from a profit to a loss.

To obtain an accurate hourly billing rate for Jason Lubar and Bob Wells, Board Certified Master Arborists (BCMA), I calculated revenue based on each employee's hours worked excluding expenses from invoice payments. Therefore, I included billed expense as its own line item in spreadsheet calculations. My goal for calculating revenue in this manner was to determine actual hourly rates by revenue source and directly correlate this to employees' effort hours. Time for BCMA's was calculated from 37.5 hours/week for 52 weeks/year for a total of 1950 possible hours per year. Time for education department employees was based on 40 hours/week for 52 weeks/year for a total of 2080 possible hours per year. Possible revenue hours were calculated by deducting time for vacation, holidays, sick leave, educational development, and conferences. Pro bono time was based on time recorded by BCMA's. Administrative time was determined by subtracting possible revenue hours from pro bono hours. For planning purposes, staff time in the education department was calculated from 50% of available annual time, for a total of 1040 hours.

Hours for interns are not always invoiced to clients since interns' time is sometimes considered to be educational and does not necessarily contribute to project completion. When they are included on invoices, it was for work that could not have been completed by regular staff. For instance, if a tree inventory was conducted, the interns' time was generally billed, but if a tree health assessment was performed only regular staff time was billed to the client. Therefore, this skews the interns' time when compared to regular staff time.

Data for the School of Arboriculture was gathered by querying Raisers' Edge software. The dataset includes the following categories: class name, fiscal year offered, class date, class capacity, number of students registered, number of students that attended, the gross income generated, the direct expenses, and the net revenue received. In addition to reported direct expenses, expense data for Bob Wells' salary and employee benefits (EBs) and supporting educational staff time as well as indirect expense calculated at 15% of operating costs were deducted from the gross revenue to determine a more precise amount of annual net revenue.

This data was then analyzed to determine trends in class sizes, attendance, expense, and revenue to inform strategic decisions and set objectives for the School's continued growth and development.

FINDINGS & ANALYSIS

From FY11 to FY13, the Urban Forestry Consultants have been running a sustainable business where revenue has been meeting expense. In the coming fiscal years, the greatest impact will be the loss of William Penn Foundation grant funding after FY14. Replacing it will be integral to maintaining future revenue levels. Of the last three years, larger contracts generated more revenue for the amount of time spent on projects. Two large contracts in 2013, the Princeton tree inventory and the Navy Yard project, greatly increased revenue above the

prior two years. The average contract amount of the top five projects from FY11 and FY12 was \$7500, in FY13 it quadrupled to \$32,600.

The School of Arboriculture is currently operating at a sustaining level, breaking even each year in the last three years, unless indirect costs are factored in, which reduces operations to a minimal deficit. The greatest impact to the School was the loss of TRACE¹ training when TRAQ² was released and training was restricted to the International Society for Arboriculture (ISA). Replacing the revenue generated by TRACE training and balancing expenses with revenue is critical to making the School profitable moving forward.

From FY 11 to FY13, the School of Arboriculture had 1323 registrations. Of the classes delivered, attendance averaged 95%. Over the last 3.5 years, 91 classes were scheduled and 12 were cancelled, half in the Fall 2013 (FY14) semester. Average registration is 16 students per class and attendance was 14 students per class. Attendance numbers may not be as reliable as registration numbers since attendance is recorded by gift shop employees at Widener and the receptionist at the Horticulture Center whose attention is often diverted in multiple directions (e.g. attending to customers, answering the phone, etc.). It is possible that students may have attended a class without being recorded. Average annual attendance for the School is 417. The number of unique individual students is 390 for the last three full fiscal years. In the fall semester of FY14, six classes out of 16 offered were cancelled. In the past three years only 11-12 classes had been offered in the fall. Sixteen classes may have been too many for the current student base of 390.

Average total expense of running the School was \$82k annually which included \$20k direct expense for TRACE training. When correcting for loss of TRACE, total expense can be estimated to be around \$65k annually. The average gross revenue for the last three years has been around \$69k with around \$9k coming from TRACE. Therefore, the target revenue goal for the School of Arboriculture is about \$65k annually to cover total expense. Generally, the last two full school years have been on target to cover the total expense of operating the School. This number provides a starting point to set targets to move from sustainable operations to profitable ones.

FORECASTS

The two main functions that I considered in analyzing the data were time and revenue to indicate employee performance in terms of generating revenue for time expended for the last three fiscal years. I used this analysis to then forecast revenue for the next three fiscal years and to guide this strategic plan's development. Expense that was invoiced to clients was included as its own line item in the analysis of the data for this project, so as to correlate to officially reported annual revenue. Revenue was projected for the next three fiscal years based on the trends from the past three fiscal years assuming a conservative growth rate of 5% for the School of Arboriculture and for billing rates for the Urban Forestry Consultants. The rate of salary increase is 3%; employee benefit expense is 34.1% for FY14 with a rate increase of 0.2% annually; the rate of general expense increase is 2%.

¹ Tree Risk Assessment Certification

² ISA Tree Risk Assessment Qualification

RECOMMENDATIONS

1. Increase Billing Rates

The Urban Forestry Consultants' billing rates have only increased by \$20/hour in the last twelve years. Cost of Living Adjustment (COLA) increases averaged 2.6%/year for the same period. To keep pace with rising costs and inflation, billing rates should be increased at least 9% for the coming fiscal year, and 5% every year thereafter to compensate for the 3% increase in expense. The Arboretum calculates compensation expense increases at a rate of 3% and general expense increase at a rate of 2%. Therefore, a 5% annual increase in billing rates will keep pace with the Arboretum's projections. Targeted contract amounts of \$7k should be pursued since these projects tend to return the most revenue for the amount of time billed. Expert witness cases generate a higher billing rate than standard arboricultural consulting projects. This type of work should be pursued to a greater extent to help achieve revenue goals. Further discussion of targeted marketing to grow client bases can be found under the discussion section below.

2. Seek Grant Funding

Both the Urban Forestry Consultants and the School of Arboriculture should pursue grants to bolster revenue to replace the loss of the William Penn Foundation funding and remain competitive with the Penn State Extension class offerings which are subsidized, respectively. EPA has recently announced \$4 million in grants awarded in the Philadelphia region for studying existing stormwater infrastructure. Seeking new partnerships and developing programming around stormwater management may increase the number of opportunities for future grant funding.

3. (a) Increase Marketing and Advertising

To increase the School of Arboriculture's class attendance, it is necessary to reach out to more potential students. Increasing the mail and email marketing lists by adding municipal contacts for Pennsylvania's Montgomery, Bucks, Delaware, and Chester counties, and New Jersey's Mercer, Ocean, Somerset, Hunterdon, and Morris counties may help increase attendance to reach class capacity. Mailing fliers with targeted content to municipal contacts may also benefit the Urban Forestry Consultants in generating new leads for projects. Marketing fliers can also be developed for other potential client categories, including developers, engineering firms, construction companies, HOA's, retirement communities, and regional institutions. Fliers should include testimonials from past clients. Client specific marketing plans should be developed with regular follow up with clients.

Another aspect of cultivating municipal relationships will be creating opportunities for face-to-face interactions with municipal staff. One way to achieve this is by offering training modules through the School of Arboriculture on topical issue areas that may include emerald ash borer management, tree canopy surveys and inventories, or simple pruning techniques from ground level. By offering these modules, municipal officials will become acquainted with the Morris Arboretum brand and the services offered by the Urban Forestry Consultants. These relationships may provide in-roads to new project work.

(b) Determine Market Penetration Among Arborists

As marketing activities increase, it is important to understand the reach of the School among local arborists. Determining the number of certified arborists who attend classes out of the total number of certified arborists in the region including New Jersey and Delaware will help guide marketing efforts as well as course content. Conducting surveys of those who attend classes may help develop content that will entice more certified arborists to take classes at the arboretum. Arborists should be considered the strategic core of the School's attendees.

4. Possible Staffing Increases

Another route to increasing revenue may be to add staff including a marketing/sales position or an additional arborist for the UF Consultants. A marketing/advertising position could shift some (6%) administrative/unassigned time (18% currently) from full-time staff and accomplish additional tasks that are not currently being performed but are integral to expanding the reach of both the UF Consultants and the School. By conducting marketing and advertising activities including managing municipal contact lists, website content, direct mailings, and client follow-up, more projects could be obtained that would in turn generate additional revenue. The additional revenue could potentially offset the expense of the marketing/sales position and generate enough work to justify the hiring of a part-time project-based employee as in the case of the Princeton Borough tree inventory.

5. Increase Class Attendance

There are two ways to increase attendance to School of Arboriculture classes: 1) Fill classes to capacity and/or 2) Offer more classes. While attendance for School of Arboriculture classes is at 95% of registered students, attendance is only at 42% of classroom capacity. The closer the rate of attendance approaches classroom capacity the greater the net revenue without increasing the number of classes offered. This requires a larger pool of students, which is supported by the marketing and advertising objective. Some of the professionals who should be developed in the student base include landscape architects, engineers, construction contractors, and property managers.

Offering more classes requires more course content to attract repeat students. One way to develop new content is by locating and bringing in emerging talent to present in classes. Emerging professionals have lower fees than established speakers and are seeking new audiences for their material. Some potential topics for future classes includes an introduction to GIS/mapping techniques for arborists, how to write more effective technical specifications, and the importance of calling the arborist first for project managers.

6. Improve Field Data Collection Technology

To improve field data collection methods, the UF Consultants have recently purchased two Apple iPads and ESRI's ArcCollector mobile application, a cloud-based GIS program for

recording tree locations and user defined data. By using this new mobile platform, data traditionally loaded into MS Excel will be loaded directly into geospatially located maps. This will eliminate the old procedure of recording tree inventory locations manually on printed CAD maps and then loading the field-collected data into AutoCAD in the office. This should save several hours in project time per tree inventory conducted; an analysis of past universal timesheet data and invoices would provide a baseline of the amount of time spent on CAD map creation.

Recommendation Implementation Timeframe

- Field data collection improvements have already been implemented.
- Billing rate increases can go into effect at the beginning of FY 15.
- Grant opportunities should be pursued immediately as deadlines tend to fall into cycles based on fiscal year.
- A marketing contact database has already been created; data has been collected for Bucks, Montgomery, and Delaware counties. Further data collection for more counties will be an on-going process.
- Exploring the addition of a marketing/advertising position should begin now and requires a further analysis of costs and benefits to determine feasibility.

DISCUSSION

Client Base

Clients from FY11-13 have been categorized as follows:

- Municipal/governmental
- Landscape architecture/architecture firms
- Institutional/non-profit organizations
- Property managers
- Residential
- Attorneys
- Home owner associations
- Retirement communities
- Golf courses
- Engineering firms
- Developers
- Arborists
- Insurance companies
- Public presentations

Work performed in the past for municipalities has generated the most revenue of all client types because of the Princeton tree inventory; otherwise the largest revenue generating client type is design firms including landscape architects and architects. The opportunities municipal work offers should be further developed given growing concerns over the spread of emerald ash borer as well as other pests and pathogens and increased understanding of the benefits of urban canopy cover in sequestering carbon dioxide emissions. Marketing to municipal officials including directors of public works and parks and recreation departments will not only benefit the Urban Forestry Consultants, but the School of Arboriculture. Work has already begun on developing a marketing database of municipal contacts collected from municipal websites. These lists will be used to increase the number of mailings distributed to advertise classes with the School.

Work with insurance companies generated the highest return for the amount of hours spent, followed by municipal/governmental, attorneys and arborists. When developing the client base going forward, effort should be focused on these groups.

Morris Arboretum Brand

The Morris Arboretum is the official arboretum of the Commonwealth of Pennsylvania and its brand represents an esteemed tradition of education, research, outreach, and horticultural display, which is reflected in the leadership of the UF Consultants and School of Arboriculture. Both Jason Lubar and Bob Wells are Board Certified Master Arborists of which there are fewer than 500 in the world. This high level of achievement is reserved for arborists who have three to five years' experience as an International Society of Arboriculture Certified Arborist and pass a rigorous examination that demonstrates their superior abilities in the field of arboriculture. Jason and Bob have over 50 years of experience in urban forestry and tree care. Their combined

knowledge and expertise is an invaluable asset that can be rivaled by few competitors and should be highlighted when marketing the services of the Urban Forestry Consultants and course offerings of the School of Arboriculture.

Further enriching the Morris brand is the Arboretum's affiliation with the University of Pennsylvania, which is one of the oldest universities in America and one of the most prestigious higher learning institutions in the world. Penn represents a rich history of excellence in research and education that continues today. The Arboretum is already exploring ways to enhance this relationship and reinforce the bond with the University. The UF Consultants and School of Arboriculture should be used to achieve this goal. Through the existing services contract with Penn, the Urban Forestry Consultants have an established presence at the University that should be expanded upon. The possibility of co-teaching an urban forestry course is one avenue available that is currently being explored. This synergy between the UF Consultants, School of Arboriculture, Morris Arboretum, and Penn should be nurtured and developed. As the UF Consultants and School strive to be regional experts in the field of arboriculture and urban forestry, developing new theories and practices and becoming a source of original information will help achieve notoriety. The development of new ideas can be supported by the strong research traditions of the Morris Arboretum and the University of Pennsylvania.

FIGURES

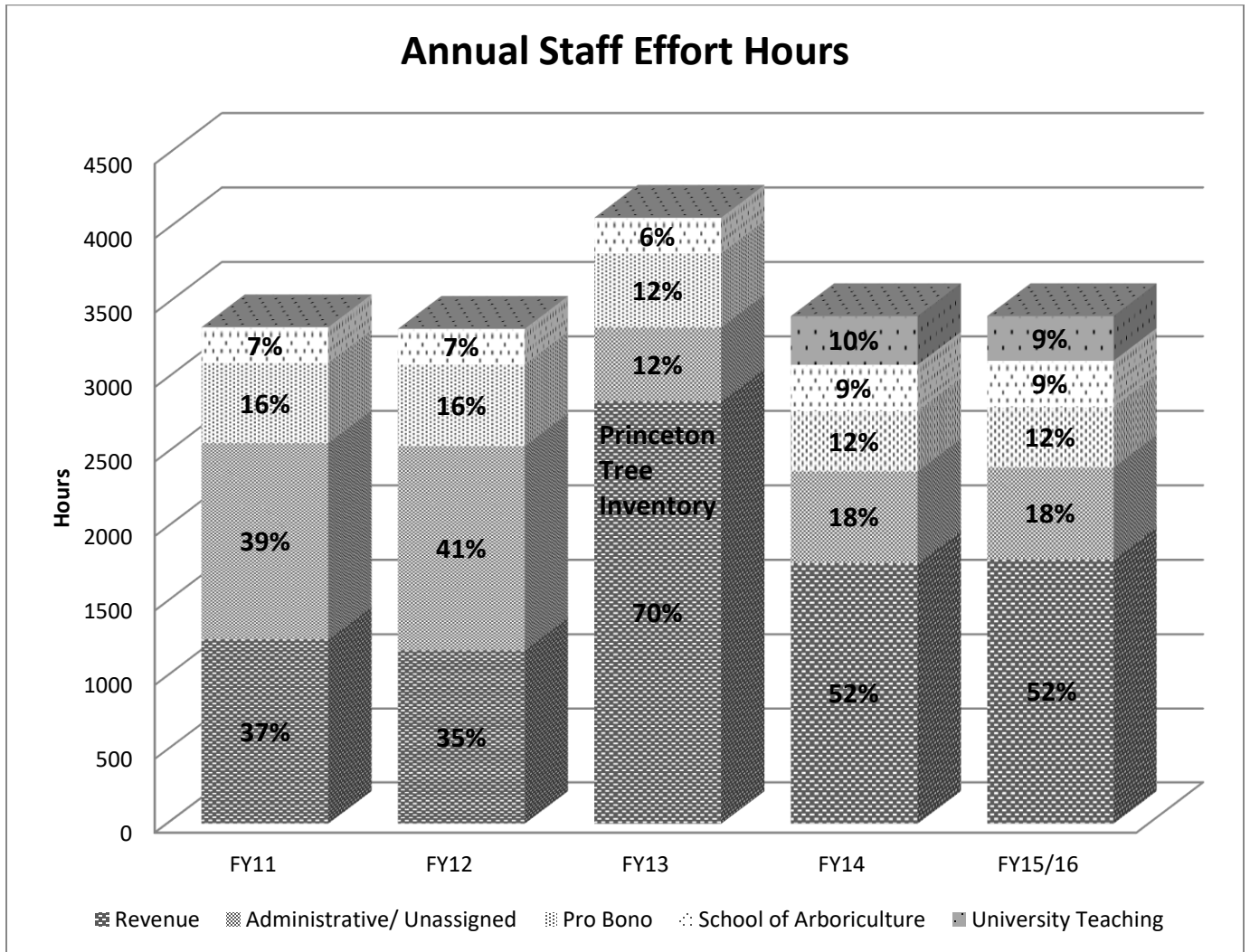


Figure 1: Annual Staff Effort Hours. This includes 2.25 FTE positions (2 BCMAs and 1 intern with .25 billable time), except for FY13 which had one additional part time project-based FTE.

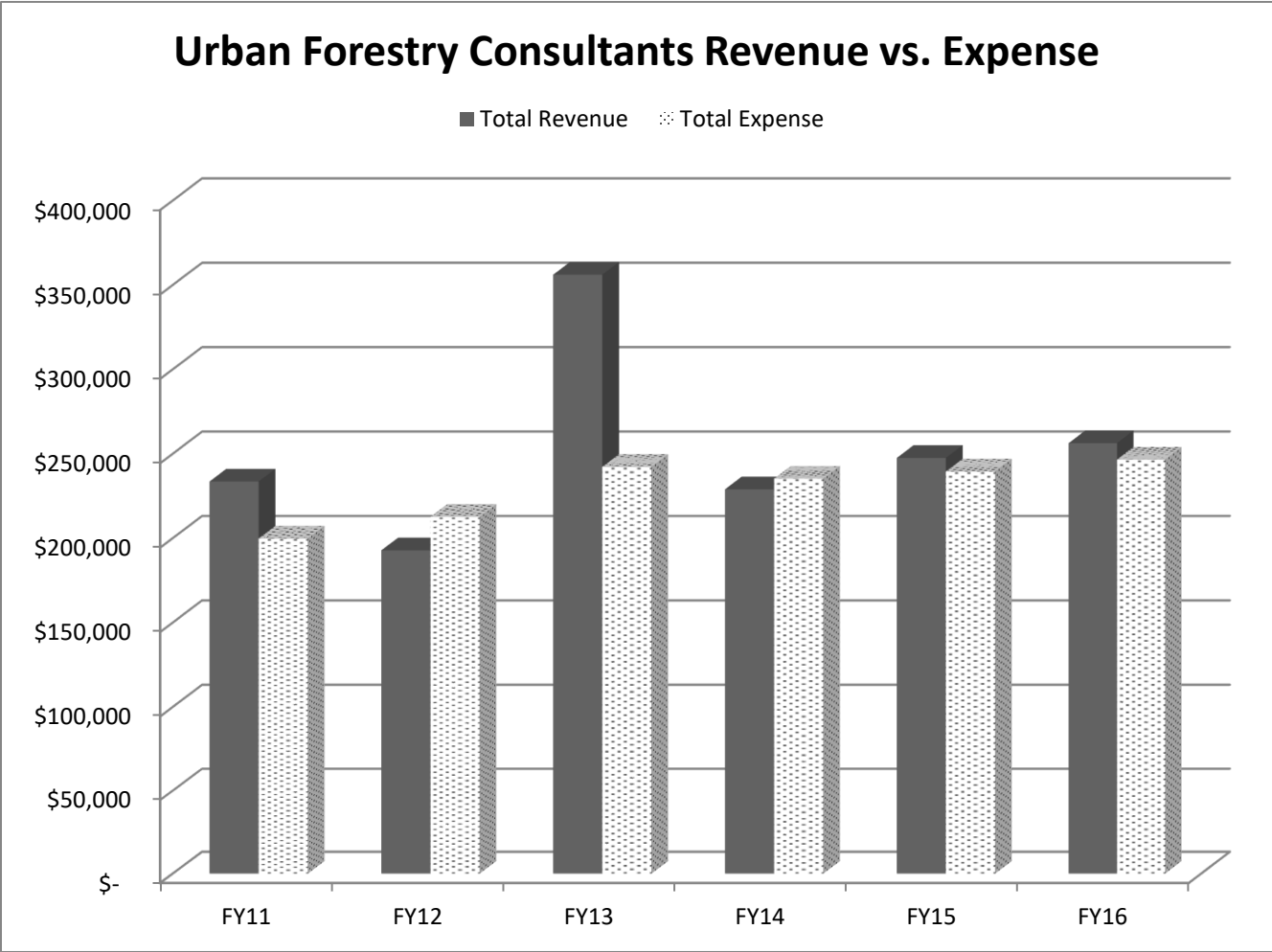


Figure 2: Urban Forestry Consultants Revenue vs. Expense. The revenue increase in FY13 came from the Princeton tree inventory when the work was completed. The bulk of the revenue was not invoiced and received until FY14 as was officially reported, but has been reported here based on the fiscal year the hours were expended.

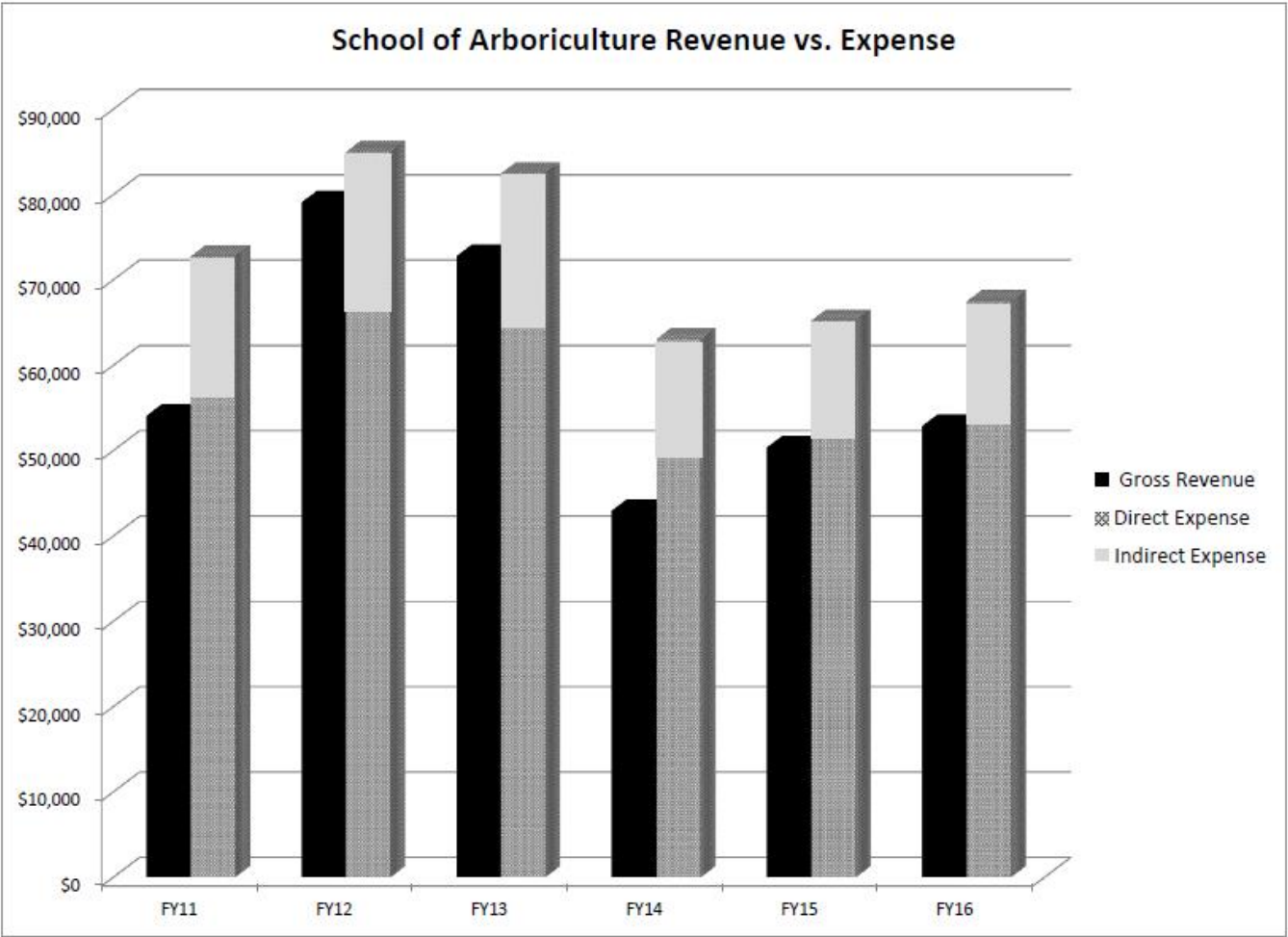


Figure 3: School of Arboriculture Revenue vs. Expense. Indirect expense is calculated as 20% of direct expense and staff time.

Gross Revenue FY 11-13

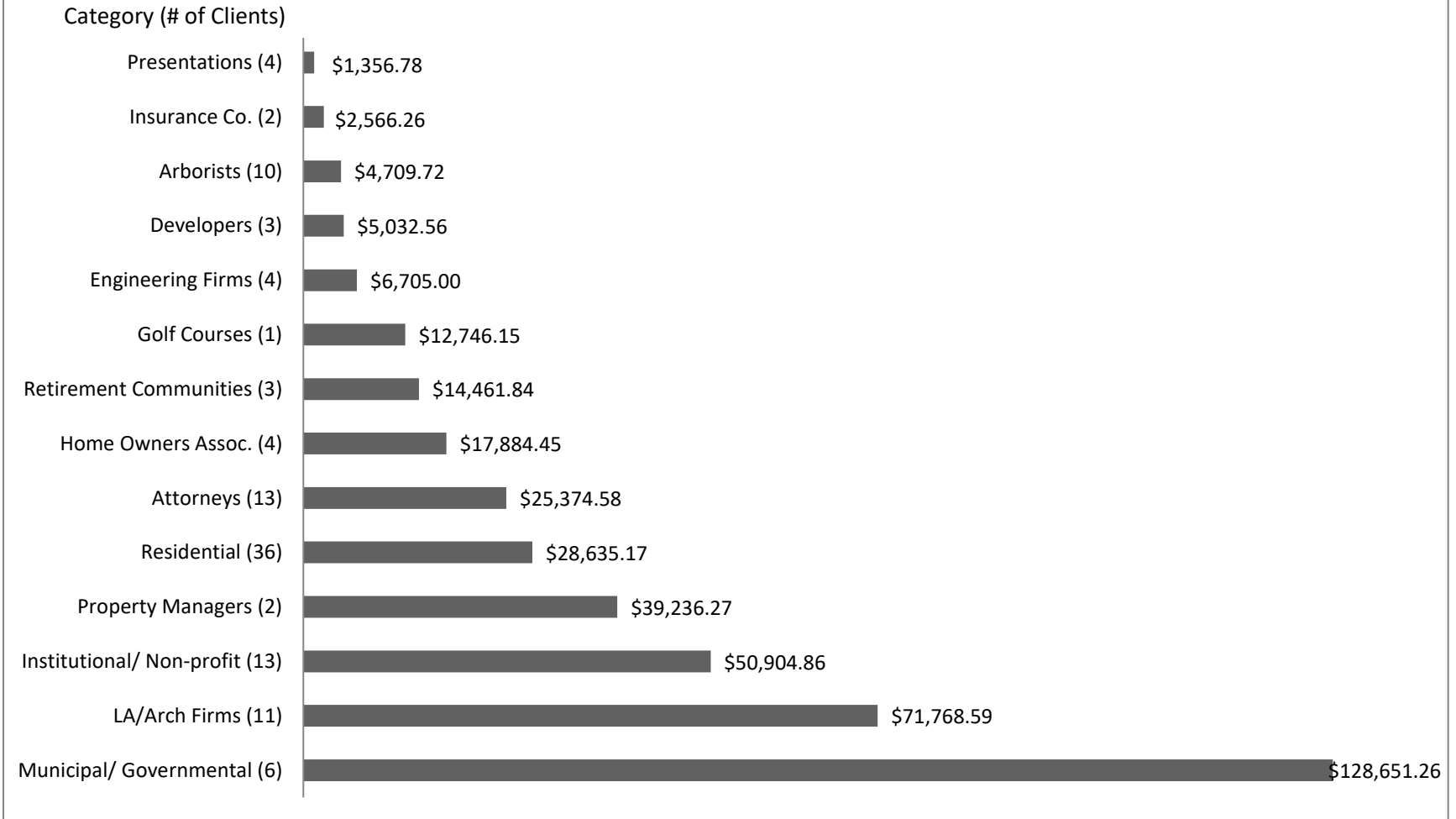


Figure 4: Client Analysis of Gross Revenue FY11-13