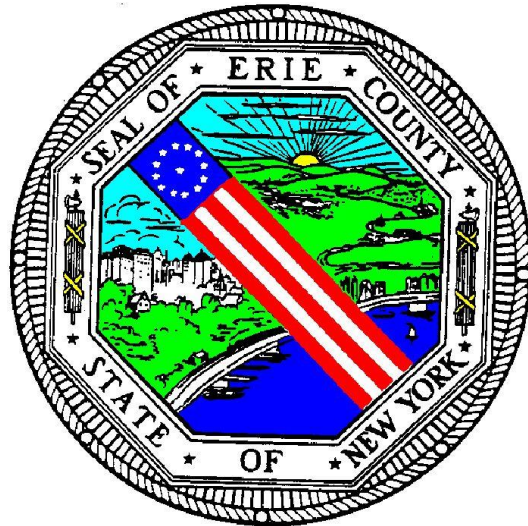


# UB Center for Industrial Effectiveness



*School of Engineering and Applied Sciences*

## **HIGH SPEED COPIER/PRINTERS COST REDUCTION AND SERVICE IMPROVEMENT STUDY**





# ***PROJECT TEAM MEMBERS***

**Champion – Greg Turner (Cheryl Mekarski)**  
**Process Owner – Tom Wasielewski, Yellow Belt**  
**Program Manager/Master Black Belt – John Lupiensi**  
**Green Belt Candidate – Mary Yoviene as of 12/8/08**

DISS                      Andrea Shear –Black Belt  
                              Tom Gebauer/Tom Frascella  
                              Helen Gonzalez    Scott Smith

Budget                    Joe Cercone –Yellow Belt  
Senior Services        Re Farley  
Social Services        Beth Gorman/Camille Klein  
                              Robin Hicks        Bonnie Blenker  
                              Robert Jaworski

Xerox                    Meagan Burton/Adam Welz   Matt Fallon   Christine Kent

# PROJECT CHARTER



**Strategic Goal/Business Case:** High speed/volume copier/printers are located in the Rath Building on the 15th floor and sub-basement print shop resulting in redundancy of equipment and staffing.

The equipment can be consolidated to one location, one machine can be eliminated and the shift staggered to provide longer coverage hours.

**Problem Statement:** DISS needs to reduce turnaround time on orders and encourage reducing production on convenience machines located in offices throughout the county by 100,000 images per month and shift the work to the print shop as soon as possible. Per Image cost on the convenience copiers is \$.0198, on the high-speed machines the cost is \$.0041, at full utilized capacity.

**Project Objective:** Save \$6,700 per month in County copier/printer costs as a result of consolidation of copy and print shops. Additional savings will be realized with a reduction in the number of convenience copiers throughout the County offices. Also reduce the amount of paper waste.



# PROJECT CHARTER



## *Benefits/Savings Potential:*

Consolidate the copy center and print shop

Transfer large volume copying to Copy/Print Center

Reduce the number of convenience copiers throughout County Departments

## *Scope/Boundaries:*

*IN*

High speed copiers in DISS - capacity and volume  
Convenience copier usage by department/machine

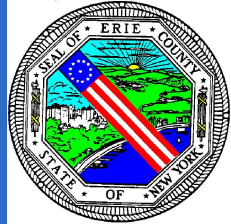
*OUT*

outside printing and other duplicating devices

## *Timeline:*

Expected completion date is July, 2009

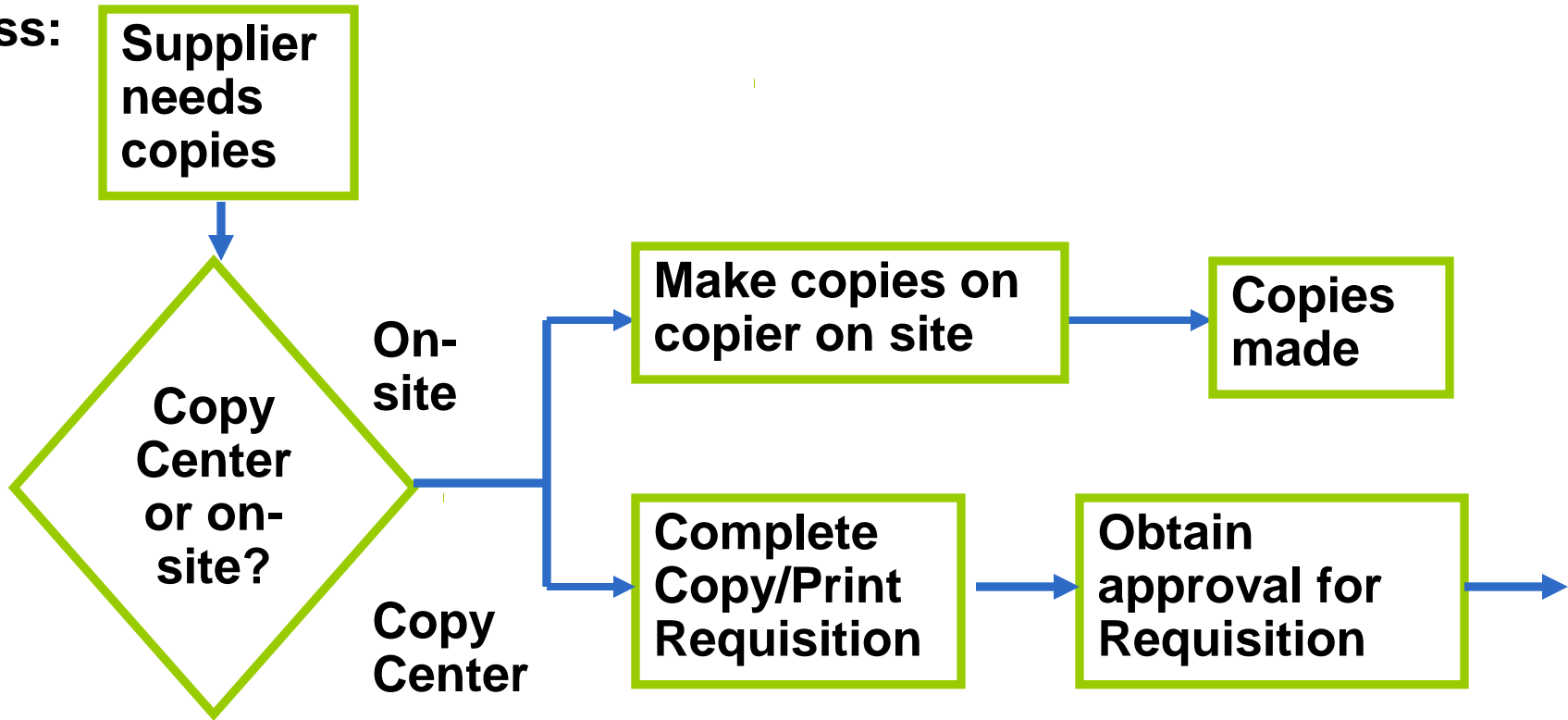


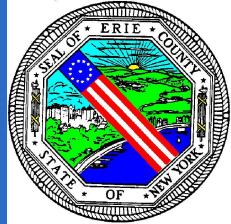


**Suppliers:** Departments, Offices, Divisions, Grants

**Inputs:** Completed Requisition, Original Document

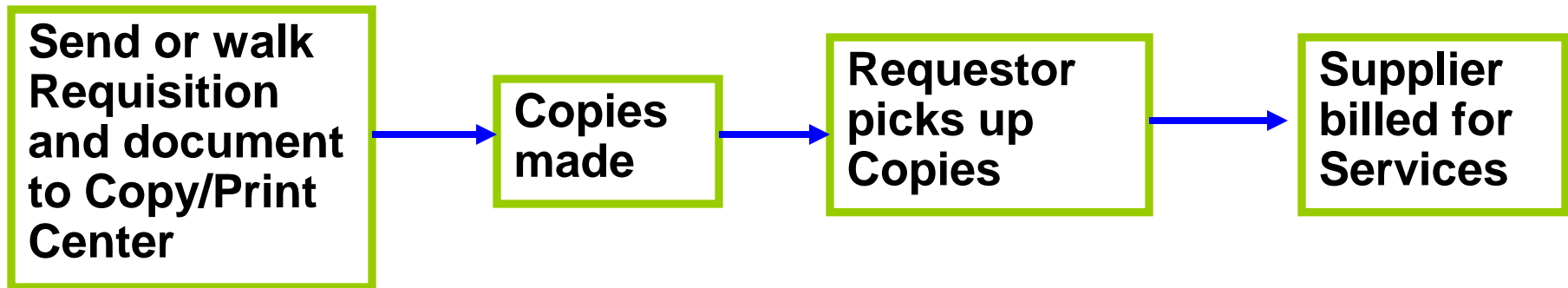
**Process:**





## Define Phase

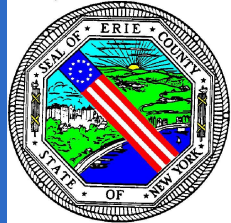
# SIPOC (Continued)



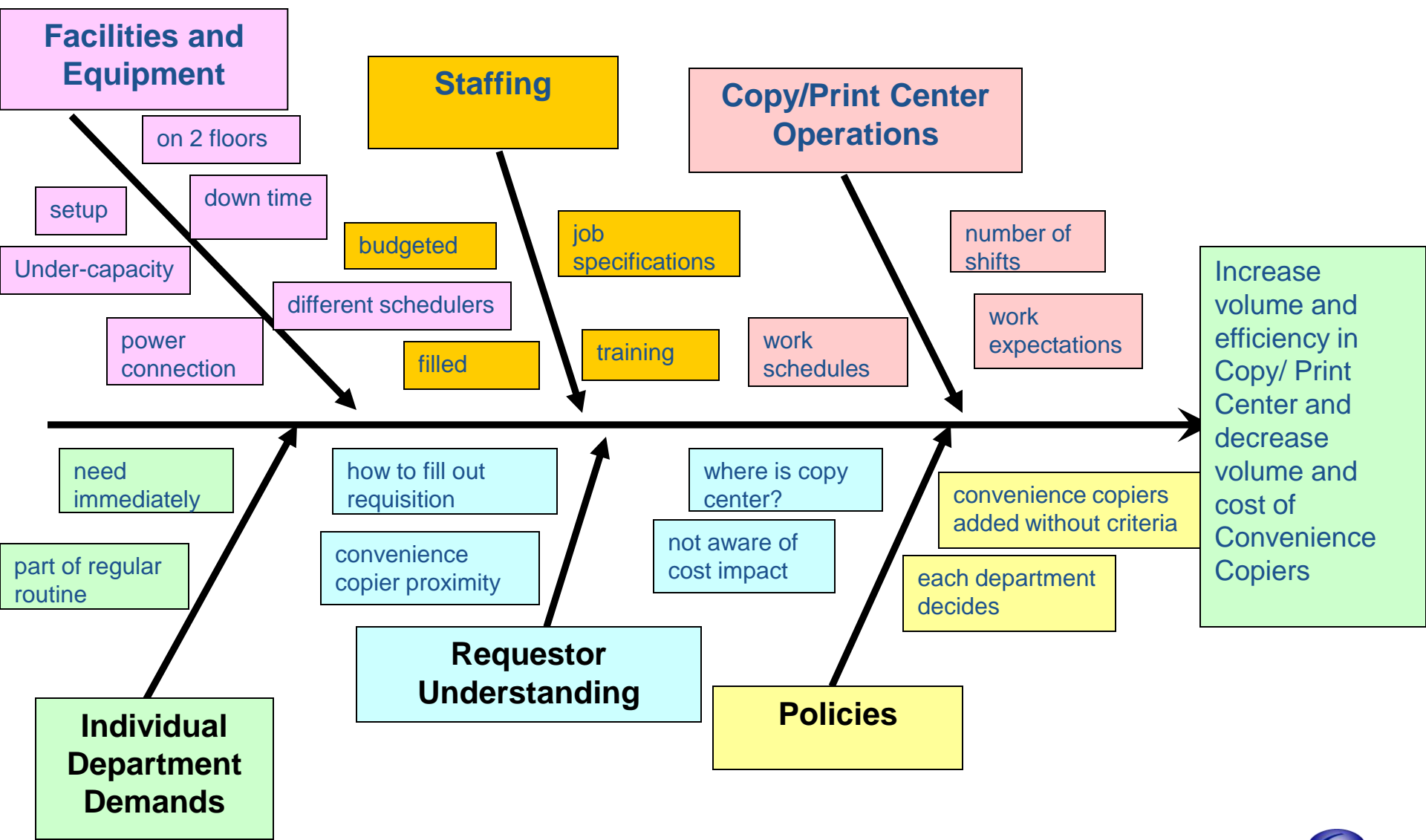
**Outputs:** Copied Documents, Billing Receipt

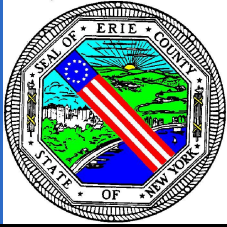
**Customers:** Departments, Offices, Divisions, Grant Programs, Taxpayers





# CAUSE and EFFECT DIAGRAM/ MATRIX





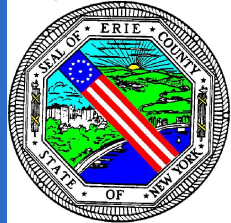
## Cost per black and white copy

**\$.0198** convenience copier

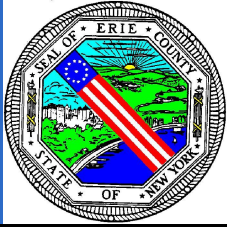
**\$.0041** high speed copiers at full utilization.



# Initial Cost Comparisons – Outside Vendors and County Copy/Print Shop



Quantity Pricing	500	1000	5000	10000	50000
Erie County	\$18.76	\$37.52	\$187.62	\$375.24	\$1,876.20
Vendors					
Staples	\$32.50	\$60.00	\$225.00	\$380.00	\$1,250.00
Kinkos	\$32.50	\$65.00	\$225.00	\$300.00	\$1,250.00
Office Max	\$35.00	\$60.00	\$225.00	\$450.00	\$2,000.00
Insty-Prints	\$31.90	\$49.40	\$120.25	\$208.21	\$907.67
Copy Store	\$25.00	\$50.00	\$250.00	\$500.00	\$2,500.00

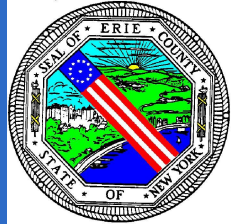


Copy/Print Center	7,991,000
Convenience Copier	28,940,000

## Opportunity

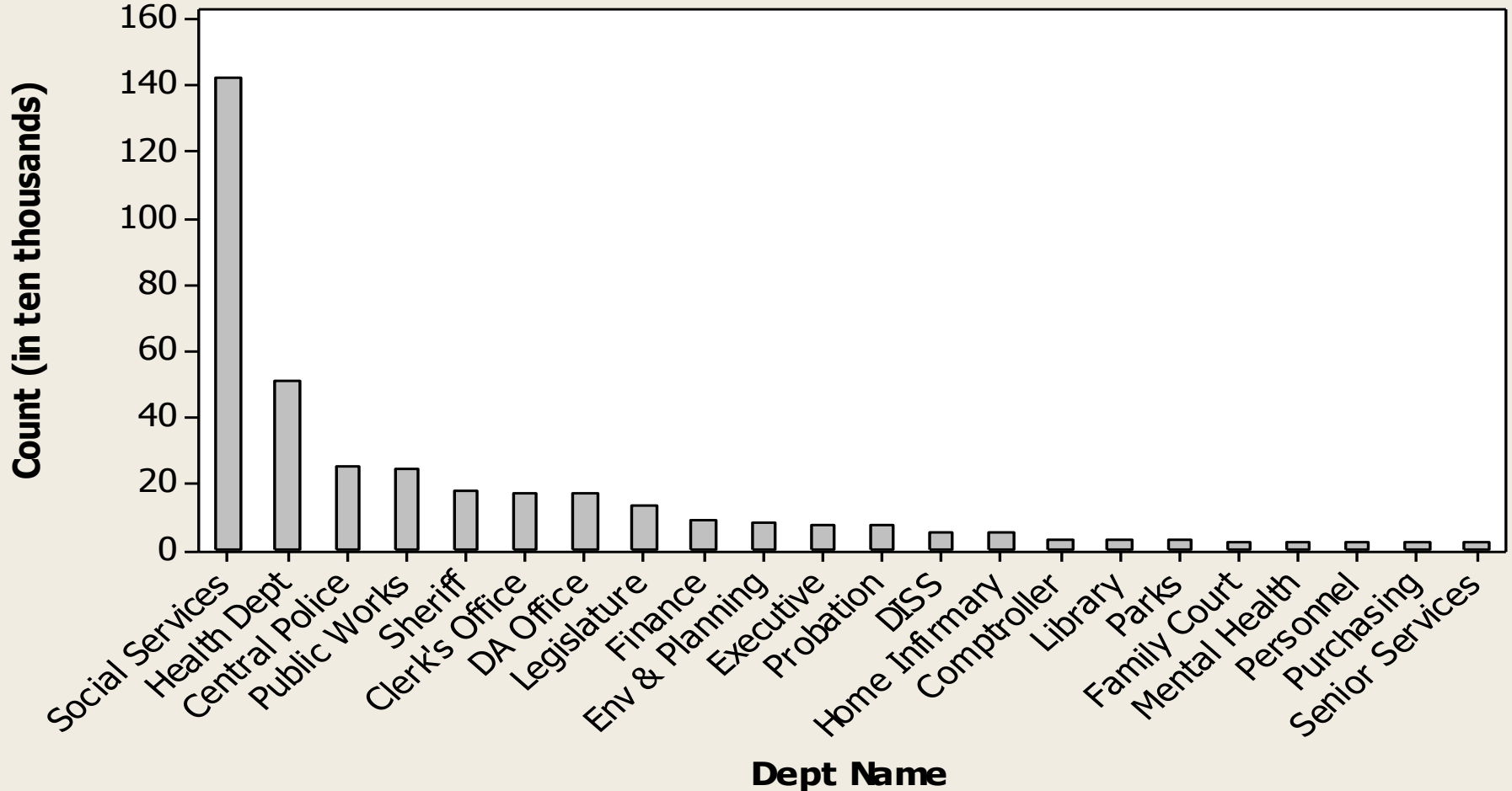
Every copy transferred to the Copy/Print Center will save the County \$.0198 and will allow the County to get closer to realizing the full utilization cost of \$.0041 for the high speed copiers.

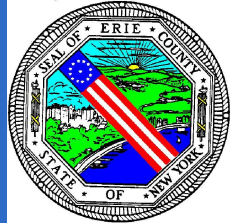
Every 100,000 copies transferred to the Copy/Print Center the County will save \$2,000 in convenience copier costs.



# Convenience Copier Volume for 2008 by Department

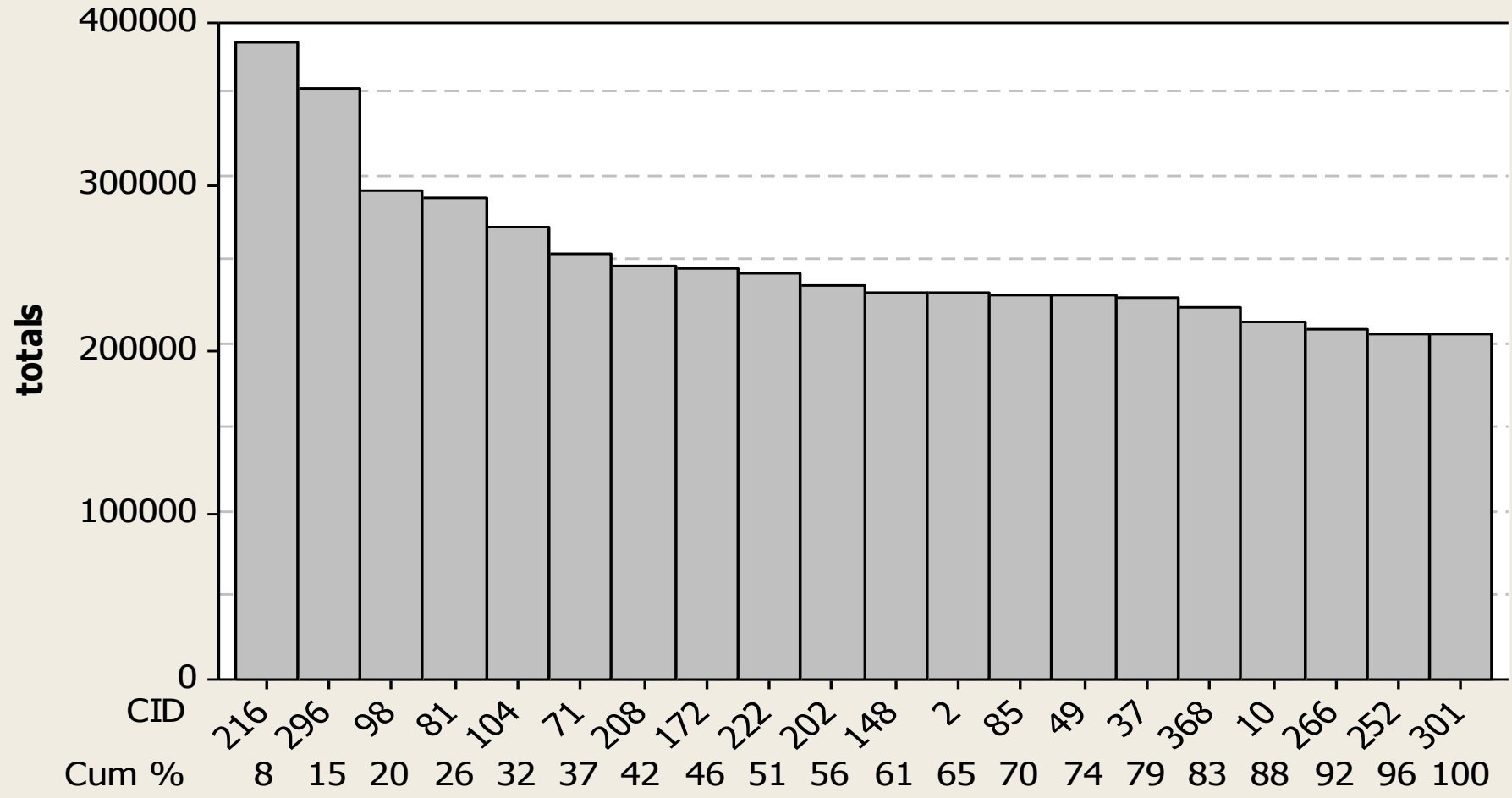
## 2008 Convenience Copier Volume

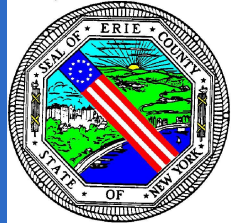




# Top 20 Copiers by Volume

## Pareto Chart of Top 20 Convenience copiers for 2008

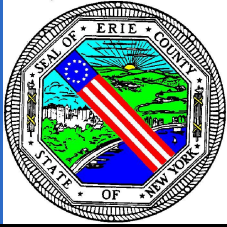




# Top 20 copiers – Department and Location

Copier ID	Department	Location
216	Sheriff	Booking
296	Sheriff	Records
98	Senior Services	North End
81	Social Services	Medicaid
104	Probation	Machine Located near 205
71	Social Services	Legal
208	Social Services	Day Care Unit
172	Probation	General
222	Social Services	CED Employment
202	Social Services	TTW (Front of Floor)
148	Social Services	Medicaid
2	Personnel	General
85	Social Services	Food Stamps
49	Sheriff	General
37	Social Services	Legal
368	CPS	Lab
10	Social Services	NPA Food Stamps
266	Health	Public Health Emergency Preparedness
252	Social Services	Administration
301	Correctional Facility	Intake Room

RECAP by Department	
<b>10</b>	Social Services
<b>3</b>	Sheriff
<b>2</b>	Probation
<b>1</b>	CPS
<b>1</b>	Correctional Facility
<b>1</b>	Health
<b>1</b>	Personnel
<b>1</b>	Senior Services



❑ Initial inquiries with departments resulted in immediate requests to copy center –

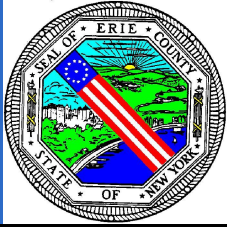
**18,000 copies in one hour**

**Savings \$360**

❑ Consolidated the copy center and print shop

**Monthly Saving \$6,700**





*Measure*

## *Data Gathered From Top 20 Copiers and Job Size*

Volume of 1,012,834 jobs run as of March 3, 2009:

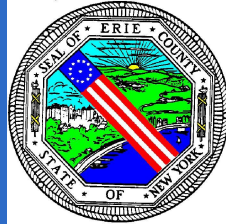
20,000 jobs were 50 sheets or more

If 20,000 jobs averaged 75 pages, **the potential** exists to transfer 1.5 million copies to Copy/Print Center

**\$29,700** in convenience copier costs savings

Getting the word out to departments and automating the request process will start the volume transfer.

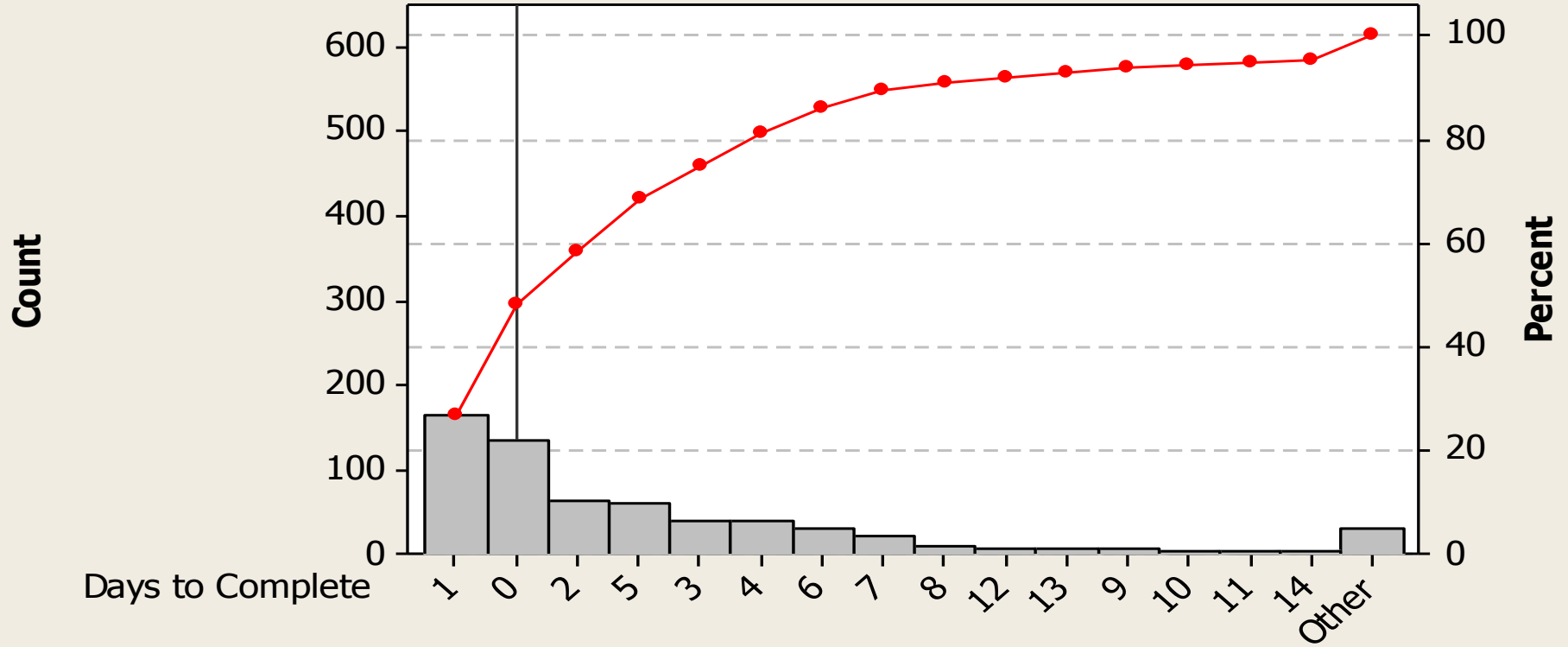




# Baseline Data – The Copy/Print Center Side of the Project

## Pareto Chart of Days to Complete Job in 2008 Jan-June

0 or 1 day = 48% of completed Jobs is the BASELINE



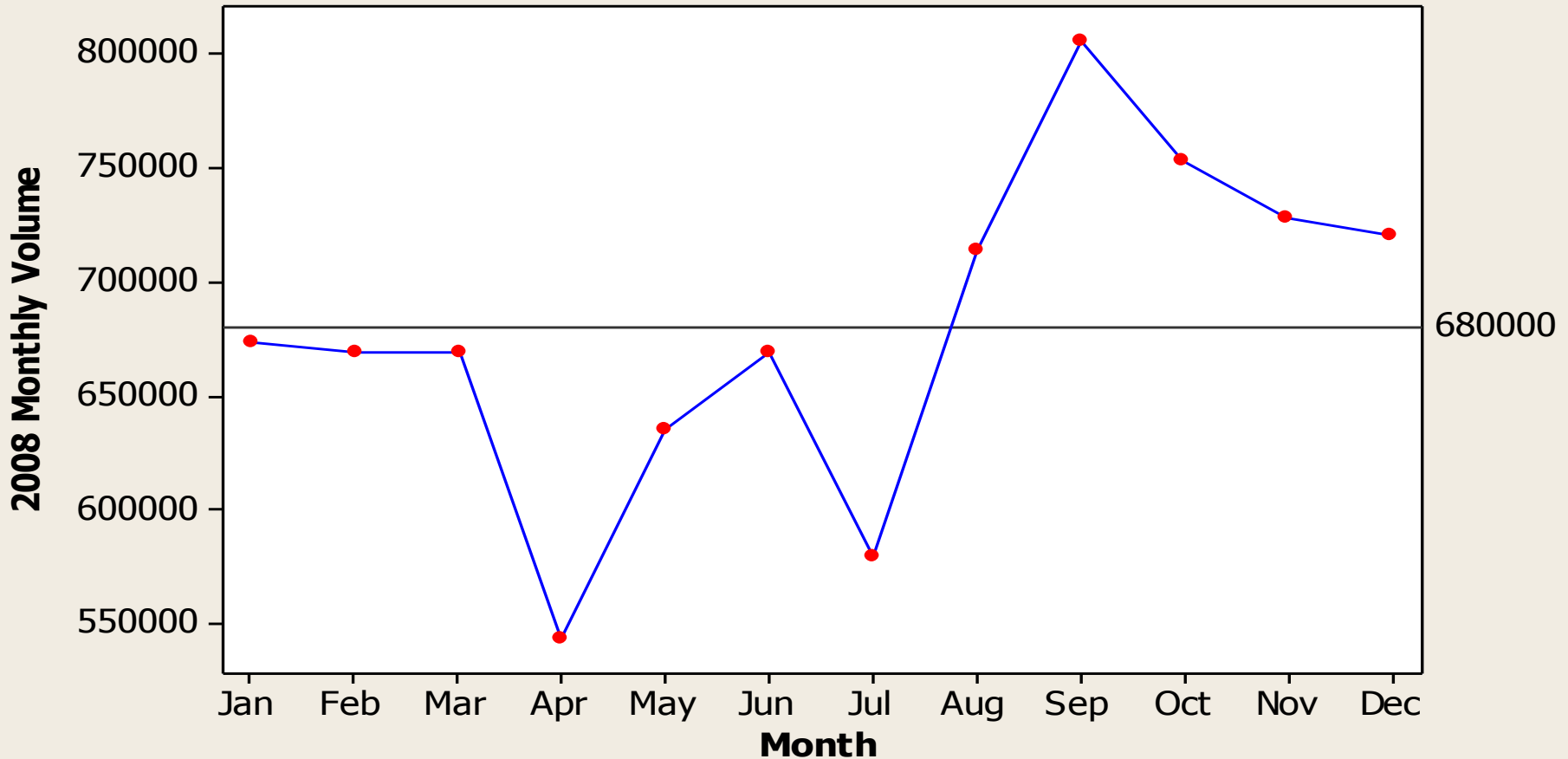
Count	163	133	62	61	40	38	31	21	8	7	6	5	3	3	3	29
Percent	27	22	10	10	7	6	5	3	1	1	1	1	0	0	0	5
Cum %	27	48	58	68	75	81	86	90	91	92	93	94	94	95	95	100

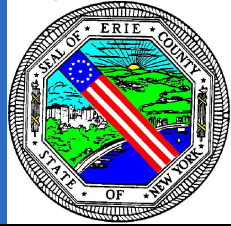


# Baseline Data – The Copy/Print Center Side of the Project

## Time Series Plot of 2008 Monthly Volume Baseline

Average Copy Baseline for Copy/Print Center = 680,000

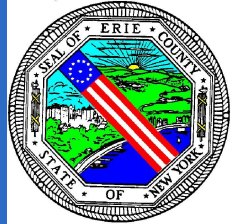




Measurement Systems Analysis performed  
RESULT - the convenience copier counter is reliable and repeatable/reproducible.

CenterWare software (free) installed in order to track all duplicating devices volume  
RESULT - provides a secondary check on volume data trends and costs.





# Survey Results – Voice of Customer

Participation Rate: 382 Respondents to the electronic survey (13%)

## Copier Usage

**58% use a copier 21+ times per week**

## Copier Training

**84% rated their training as either Poor, Fair or Satisfactory**

## Functionality

**81% would like to easily convert hard copy documents into electronic format**

## Top Areas of Opportunity (*Strongly Agree or Agree*)

**#1 More Electronic Storage + 79%**

**#2 Reliability of Copiers 74%**

**#3 Training on special features of office devices 72%**

**#4 Confidential print 68%**

**#5 Quality of Copiers (output) 62%**

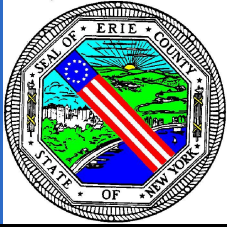
**#6 Service response /resolution time 62%**

## Change Mgmt.

**95% would support a more cost effective manner to print and reproduce documents**

**90% would support changing from their primary printer to a multifunction device**

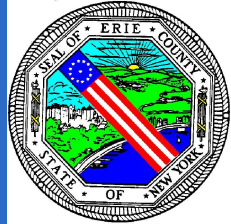




**Copy Center Production Log** – To measure increase in volume and quicker turn around (Implemented)

**5S Copy Center** – Concentrated on three S's- Sort, set and shine (Done)





# What is 5 S?

SORT: KEEP OR SAVE: RED TAG/  
TOSS

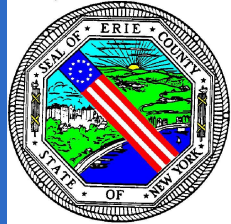
SET IN ORDER: MAKE A PLACE  
FOR EVERYTHING;  
- MOTION ECONOMY

SHINE: CLEAN; MAINTAIN  
PROCEDURES

STANDARDIZE: - FOLLOW-THROUGH  
- DOCUMENTATION

SUSTAIN: The Way You Work  
- Audit / INSPECT





Improve

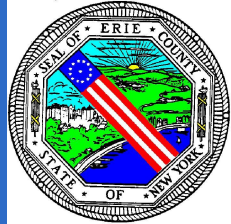
# Sort and Set the Copy/Print Center Paper Stock

## Before



## After





Improve

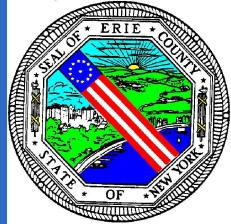
# Shine and Set the Equipment

**Before**  
**On two floors**



**After**  
**Consolidation**





*Improve*  
**AUTOMATE COPY REQUEST – BROCHURE** Distributed 5/1/09



<http://dissforms.erie.gov/dissforms/JustClick.aspx>

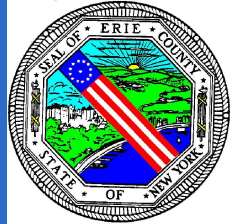
You are only  
**ONE CLICK AWAY**  
for All Your Copy  
Needs!



Please help us continue our  
efforts to *save* Erie County  
*Time, Energy & Money!*

An easy to use form can be found at:  
<http://dissforms.erie.gov/dissforms/JustClick.aspx>

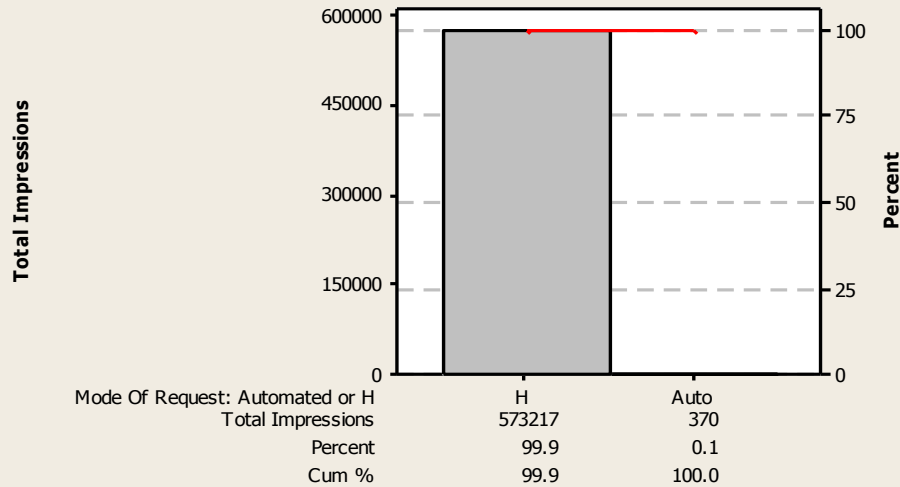




# WHAT ARE the RESULTS? AUTOMATED REQUESTS ARE GOING UP!!! **83%** from 5/1 thru 6/5/09

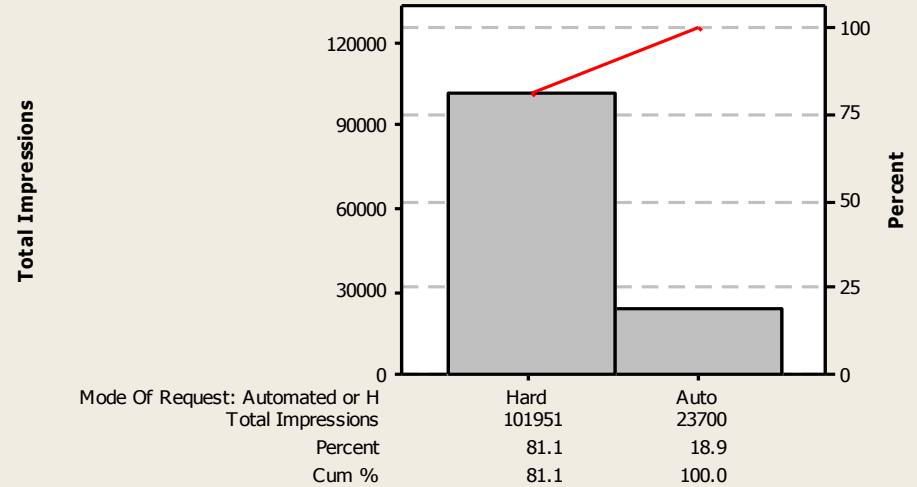
**Pareto Mode Of Reqt: Auto or Hard Copy as of 4/24**

100% Hard Copy Prior to GO LIVE with AUTO REQUEST



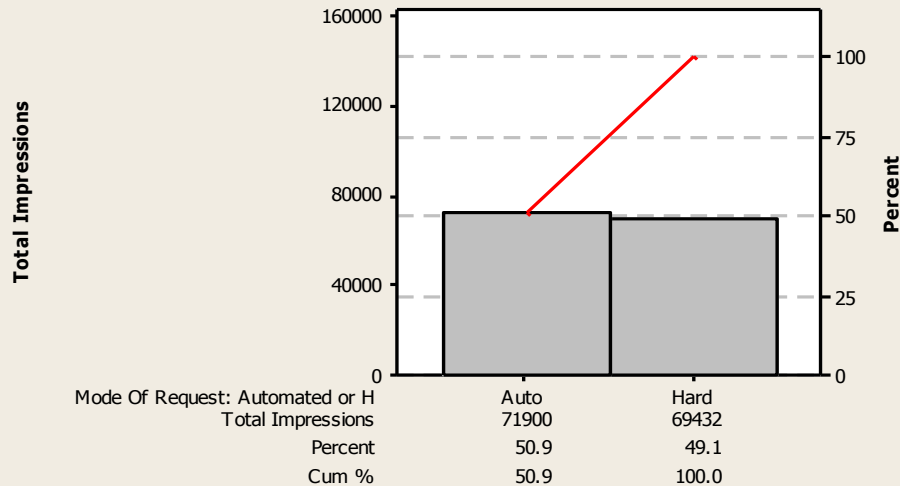
**Pareto Mode Of Reqt: Auto or Hard Copy as of 4/27**

19% AUTO REQUEST

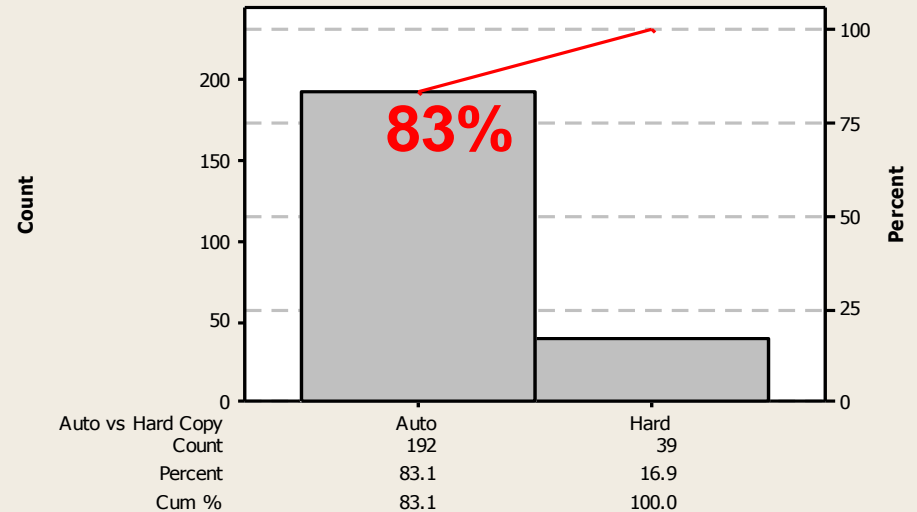


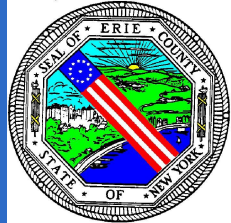
**Pareto of Mode Of Reqt: Auto or Hard Copy as of 5/3**

49% AUTO REQUEST

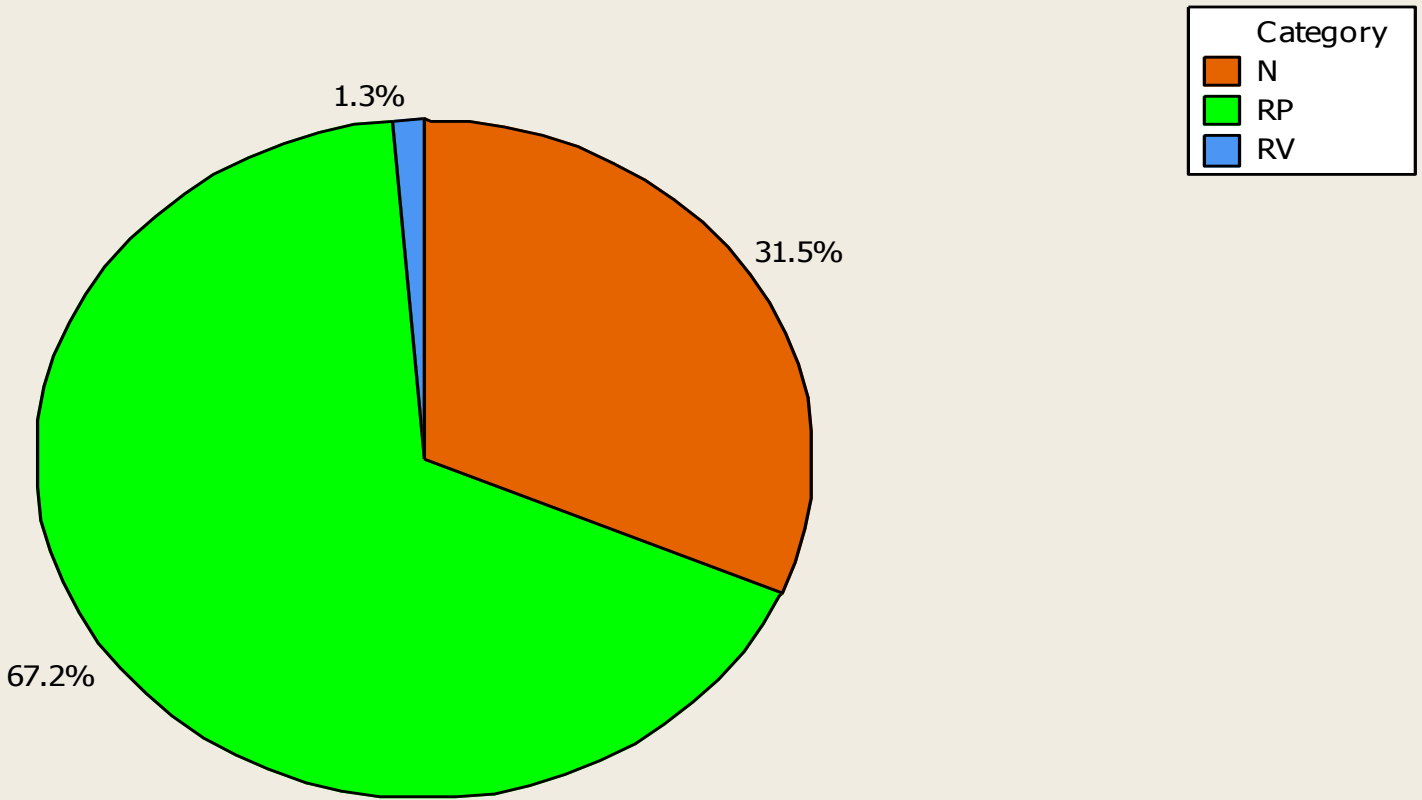


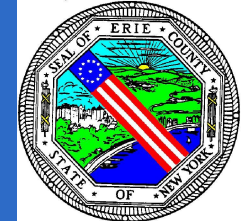
**Pareto Chart of Auto vs Hard Copy 5/1 to 6/5/09**





Pie Chart of New, Revised or Reprint

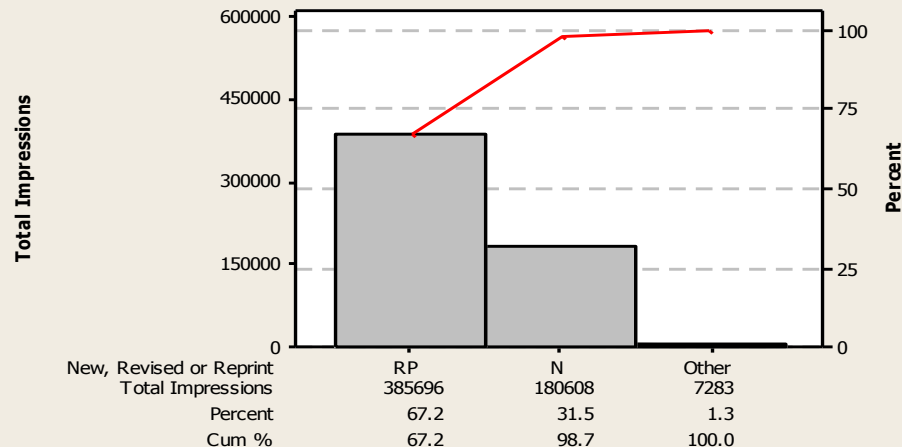




# \$10,000 in Savings in 7 weeks from New Jobs to Copy/Print Center

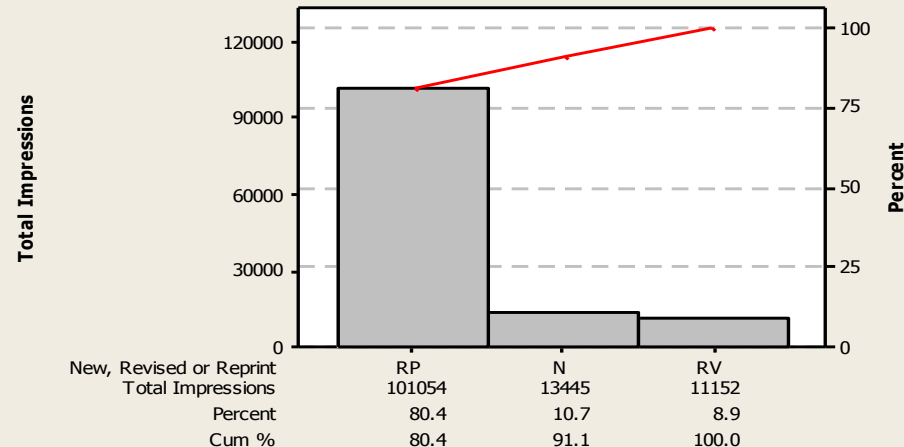
**Pareto New, Revised or Reprint as of 4/23**

32% New Copy Work in Print Room



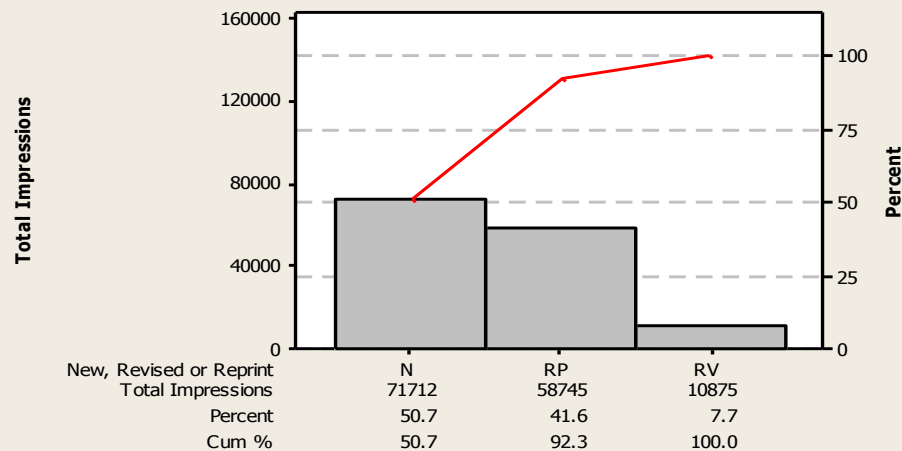
**Pareto New, Revised or Reprint as of 4/27**

11% New Copy Work in Print Room



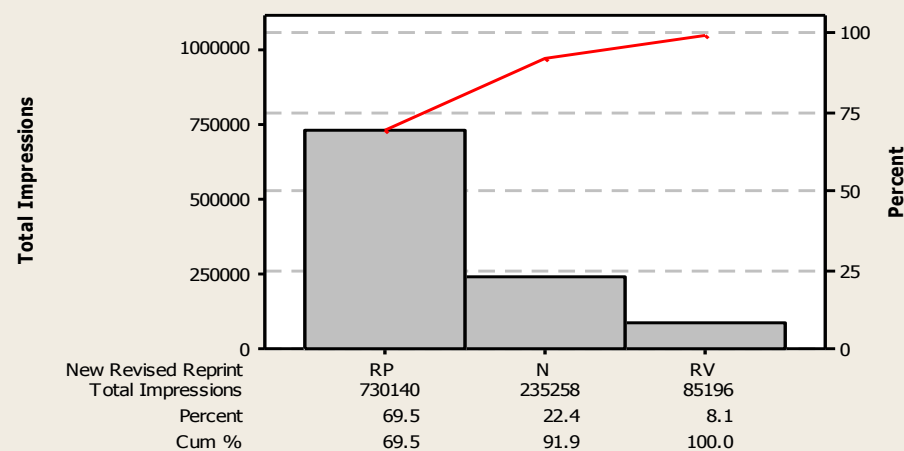
**Pareto New, Revised or Reprint as of 5/3/09**

51 % New Copy work in Print Room

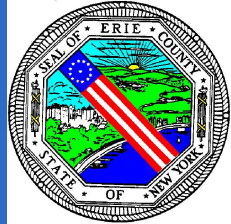


**Pareto Chart of New Revised Reprint 5/3 to 6/5/09**

One month of Data 235,258 new copies made @ .02 each= \$4,705 SAVED

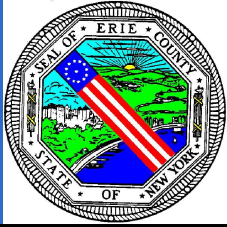


# RESULTS TO DATE – COPY/PRINT CENTER VOLUME INCREASING



-----2009 Copy Center Volume-----		-----2008 Copy Center Volume-----	
Jan	695,673	Jan	673964
Feb	830,350	Feb	669164
Mar	865,408	Mar	669164
Apr	<u>1,299,442</u>	Apr	<u>544348</u>
4-Mo Total	<u>3,690,873</u>	4-Mo Total	<u>2556640</u>
4-Mo Increase	1,134,233		
Projected Annual Increase	3,402,699		
	SAVINGS		<b>\$68,054</b>





# Copy Center Production Highlights

Original Benchmark

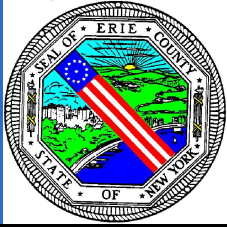
680,000 copies

Monthly Average Volume -Jan to April 2009

922,000 copies

April 2009 – A FIRST!

1,000,000 + copies



*Control*

# Updated Copy Center Production Highlights

Original Benchmark

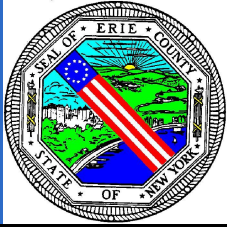
680,000 copies

Monthly Average Volume -Jan to June 2009

838,000 copies

Goal: 1,000,000 per month





*Control*

# Six Sigma Project Done By XEROX

## Business Process Improvement Efforts

DISS

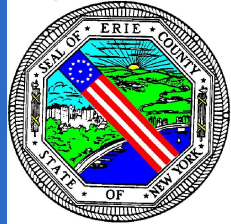
Create 15 to 1 ratio – Users to devices

Reduce Convenience Copiers

32 Black & White @ \$144 per month

6 Color @ \$288 per month

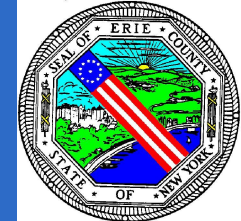




# Update Copy/Print Center Volume Increase

Total Convenience Copies Jan-May, 2009	11,594,729
Est. 2009 Annual	27,827,350
2008 Annual	<u>28,940,339</u>
Est.Reduction in Convenience Copies	<u>1,112,989</u>
Cost Savings	<u><b>\$22,260</b></u>

# *Annualized Saving*

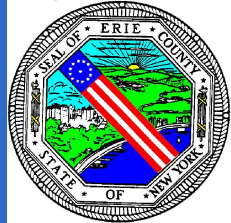


Consolidation: \$80,400

Print Center Volume Increase: \$68,000

Convenience Copier Reduction: \$76,000

**TOTAL: \$224,400**



# Updated Annualized Savings

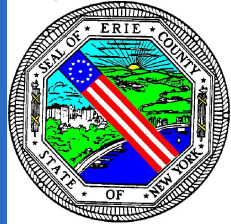
Project Goal \$120,000

CONSOLIDATION COPY/PRINT CENTER (APR 2009)

CONVENIENCE COPIER REDUCTION (AUG 2009)

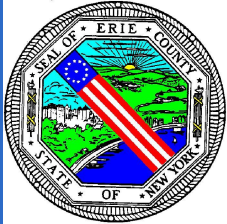
32 bw  
6 color

	2009	2010
	60300	80400
32 bw	23040	55296
6 color	8640	20736
	91980	156432



- Process Flow Diagrams
- On-line user instructions
- Production logs
- Custom electronic reports and billing information for departments
- CenterWare Software – to verify billing on convenience and high speed copiers





## Erie County Print/Copy Center Requisition Form

Located at <http://dissforms.erie.gov/dissforms/JustClick.aspx>, the Erie County Print/Copy Center Requisition Form makes it easier than ever to request print, copy, graphics or publishing work from the Erie County Print/Copy Center.

Most of the pertinent information is filled out for you based on your login account: name, phone number, email address, department, division and location. In the case that this information has not automatically populated it is virtually effortless supplying this using the drop-down boxes and text boxes provided.

Here is a listing and explanation of the fields you'll need to fill in to submit your request:

**Cost Center:** Your department's SAP cost center number.

**Fund:** Supplemental to the cost center number.

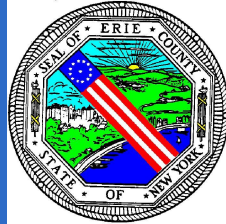
**WBS Element:** Or funded element.

**Grant:** If your department is using an external grant, provide the grant number in this field.

**Title for Job:** You may make up a title for the job or use a title supplied by a previous requisition.

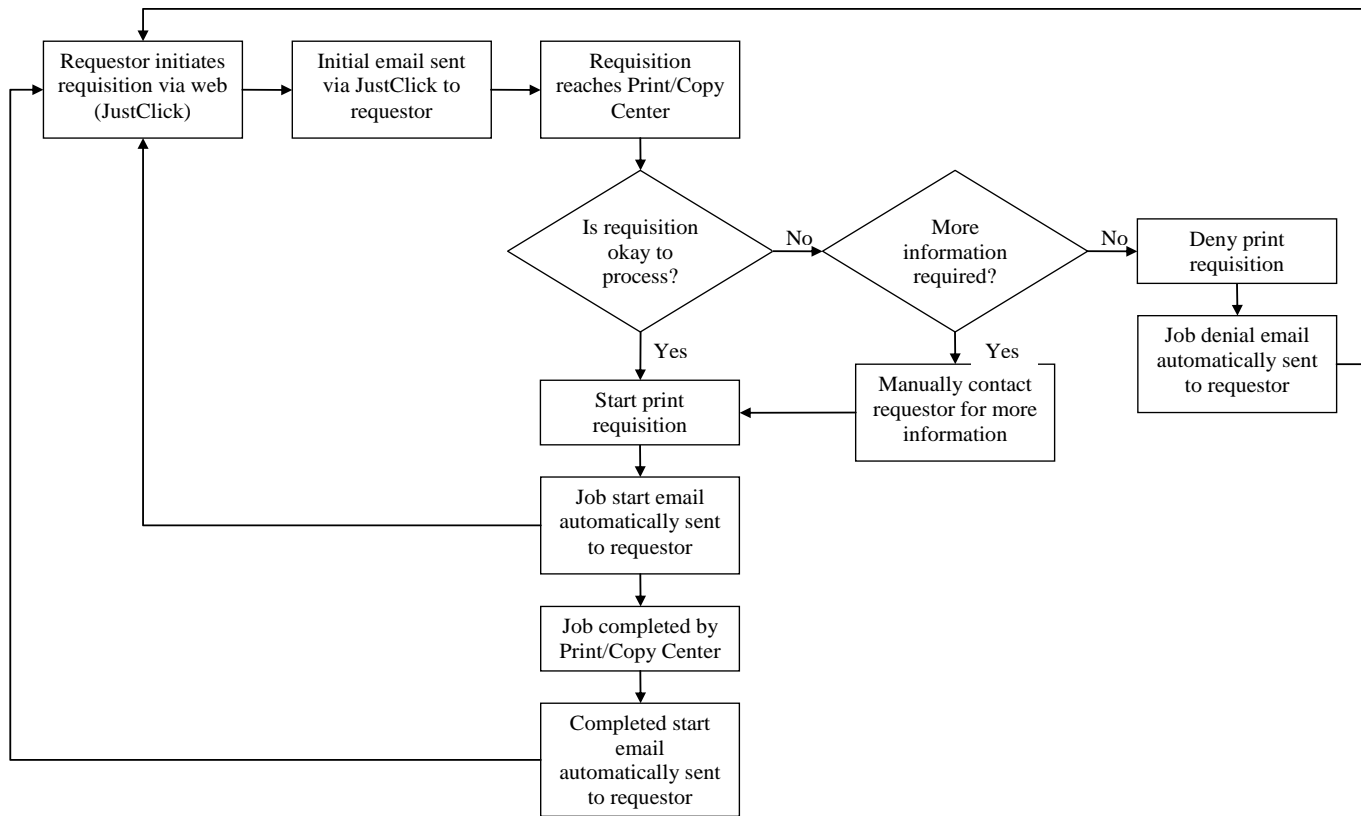
**Form Number:** For those using older Print/Copy Center Requisitions, this field remains available for convenience.



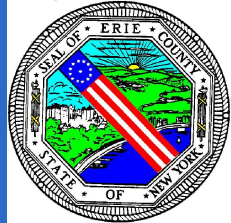


## Print/Copy Center Online Requisition Process Map

<http://dissforms.erie.gov/dissforms/JustClick.aspx>



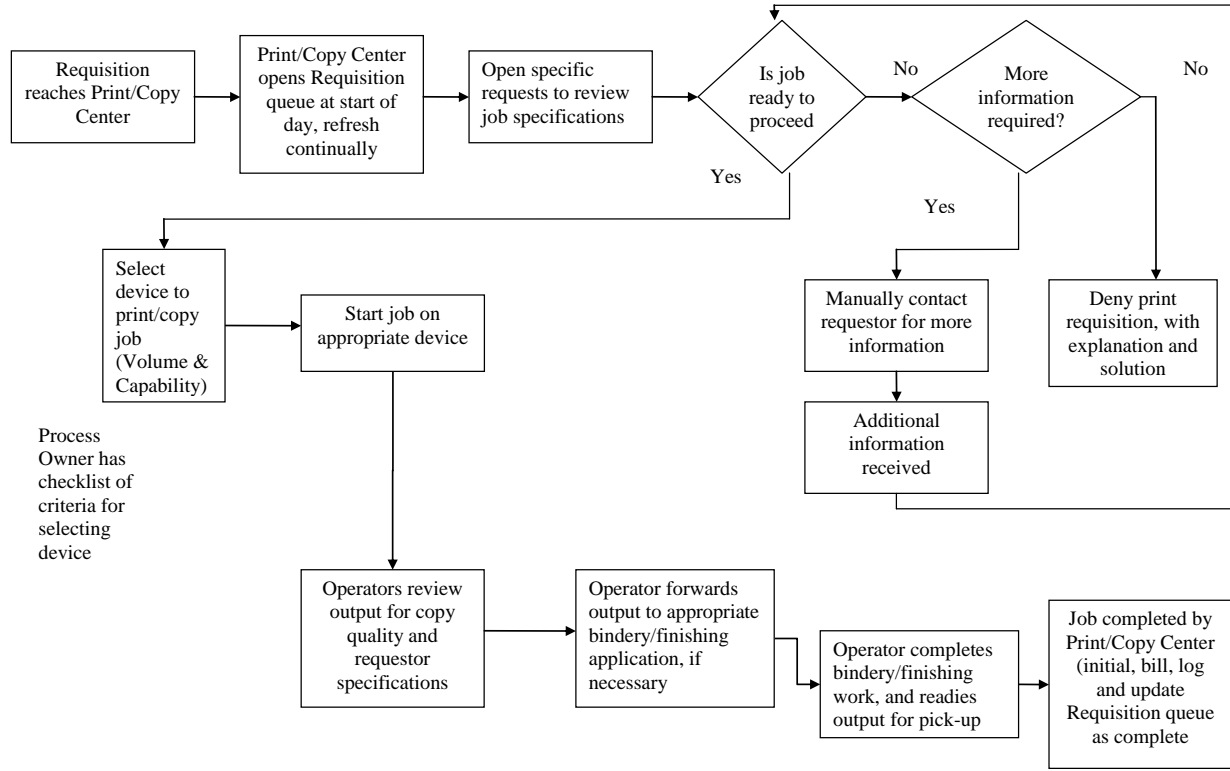
# New Process Flow Diagram-Copy/Print Center



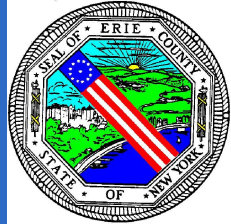
## Print/Copy Center Job Process Map

24-Hour Turnaround

<http://dissforms.erie.gov/dissforms/JustClick.aspx>



# SIX SIGMA TOOLS USED



Define	Measure	Analyze	Improve	Control
<ul style="list-style-type: none"> <li>✓ Problem Statement</li> <li>✓ Macro Map</li> <li>✓ Identify Customers</li> <li>✓ Project Scope</li> <li>✓ Primary Metric</li> <li><input type="checkbox"/> Secondary Metric</li> <li><input type="checkbox"/> Consequential Metric</li> <li>✓ Baseline Data</li> <li><input type="checkbox"/> Entitlement</li> <li><input type="checkbox"/> Objective Statement</li> <li>✓ Financial Estimates</li> <li><input type="checkbox"/> Non-financial Benefits</li> <li>✓ Team Members</li> </ul>	<ul style="list-style-type: none"> <li>✓ SIPOC Diagram</li> <li>✓ Process Flow Diagram</li> <li>✓ Value Analysis/ Muda</li> <li>✓ Detailed Flow (I/O)</li> <li>✓ Measurement System Analysis</li> <li><input type="checkbox"/> Capability Analysis</li> <li><input type="checkbox"/> Short Term Capability</li> <li><input type="checkbox"/> Long Term Capability</li> <li>✓ Data Collection</li> <li>✓ Process Monitoring</li> <li>✓ Lean Opportunities</li> <li>✓ C &amp; E Fishbone</li> <li><input type="checkbox"/> C &amp; E Matrix</li> </ul>	<ul style="list-style-type: none"> <li>✓ Potential X's</li> <li>✓ Graphical Analysis</li> <li><input type="checkbox"/> Hypothesis Testing</li> <li><input type="checkbox"/> Means</li> <li><input type="checkbox"/> Variance</li> <li><input type="checkbox"/> Proportions</li> <li><input type="checkbox"/> ANOVA</li> <li>✓ Regression Analysis</li> <li><input type="checkbox"/> FMEA</li> <li>✓ ID Critical X's</li> <li>✓ Quick Improvements</li> <li>✓ Lean Improvements</li> <li>✓ Process Tracking</li> </ul>	<ul style="list-style-type: none"> <li>✓ Regression Analysis</li> <li><input type="checkbox"/> DOE Planning</li> <li><input type="checkbox"/> Screening DOEs</li> <li><input type="checkbox"/> Quantifying DOEs</li> <li><input type="checkbox"/> Optimizing DOEs</li> <li>✓ Verify Critical X's</li> <li>✓ Y = F(x)</li> <li>✓ Optimization</li> <li>✓ Generate Solutions</li> <li>✓ Select Solutions</li> <li>✓ Pilot Trials</li> <li><input type="checkbox"/> Capability Analysis</li> </ul>	<ul style="list-style-type: none"> <li>✓ Control Methods</li> <li>✓ Control Plans</li> <li><input type="checkbox"/> Poka-Yoke</li> <li><input type="checkbox"/> SPM – Monitor Y</li> <li><input type="checkbox"/> SPC – Control X's</li> <li><input type="checkbox"/> OCAP</li> <li><input type="checkbox"/> Update FMEA</li> <li>✓ Project Transition Action Plans</li> <li>✓ Update Financial Benefits</li> <li><input type="checkbox"/> Final report</li> <li><input type="checkbox"/> Close Project</li> </ul>
<input type="checkbox"/> Define Review	<input type="checkbox"/> Measure Review	<input type="checkbox"/> Analyze Review	<input type="checkbox"/> Improve Review	<input type="checkbox"/> Control Review

