

INCREASING EFFICIENCY IN THE HOUSTON
FIRE DEPARTMENT PERMITTING SECTION
USING LEAN SIX SIGMA



BACKGROUND

Houston Fire Department Permitting Office

- Provides fire alarm and fire prevention permitting for the City of Houston
- Includes 7 Customer Service Representatives (CSRs) and 2 supervisors
- Primary duties include opening and processing mail, processing walk-in customers, answering phones, sending invoices and other general office duties

METHODOLOGY

Define	Measure	Analyze	Improve	Control
<ul style="list-style-type: none">• Problem / Mission Statement• Define Project Scope	<ul style="list-style-type: none">• Observe<ul style="list-style-type: none">• Invoice Printing• Mail Processing• Permit Issuing• Create Process Map	<ul style="list-style-type: none">• Time studies• Sendback mail analysis• Mail Batch analysis• ILMS issue breakdown	<ul style="list-style-type: none">• Just Do It (phone system)• Develop future state• Reassignment of Job Duties• Standard Work Implementation	<ul style="list-style-type: none">• Monitor new Sendback log• Monitor Standard Work• Monitor Mail Batch processing

DEFINE

DEFINE: PROBLEM AND MISSION STATEMENT

Problem Statement:

Due to recent compliance efforts, the Houston Fire Department Permit Office is aware that mail in permits will increase by at least 15 percent in the next 3-4 months. With a diminished staff and a lack of standard work, the increased workload cannot be handled appropriately, leading to possible customer complaints, backlog issues and downstream confusion among fire inspectors.

Mission Statement:

To reduce the inefficiency of mail processing to process a workload increase of 15 percent with the existing staff over the next 3-4 months (ending June 2013).

To reduce the average time to print invoices from 4-8 hours to under 1 hour, resulting in time savings of 75-87% by March 2013.

Scope:

The Project Scope includes identifying opportunities for efficiencies in fire prevention and alarm permits mail processing and invoicing. This includes addressing standard work, reassignment of duties, invoicing, sendbacks and the phone system.

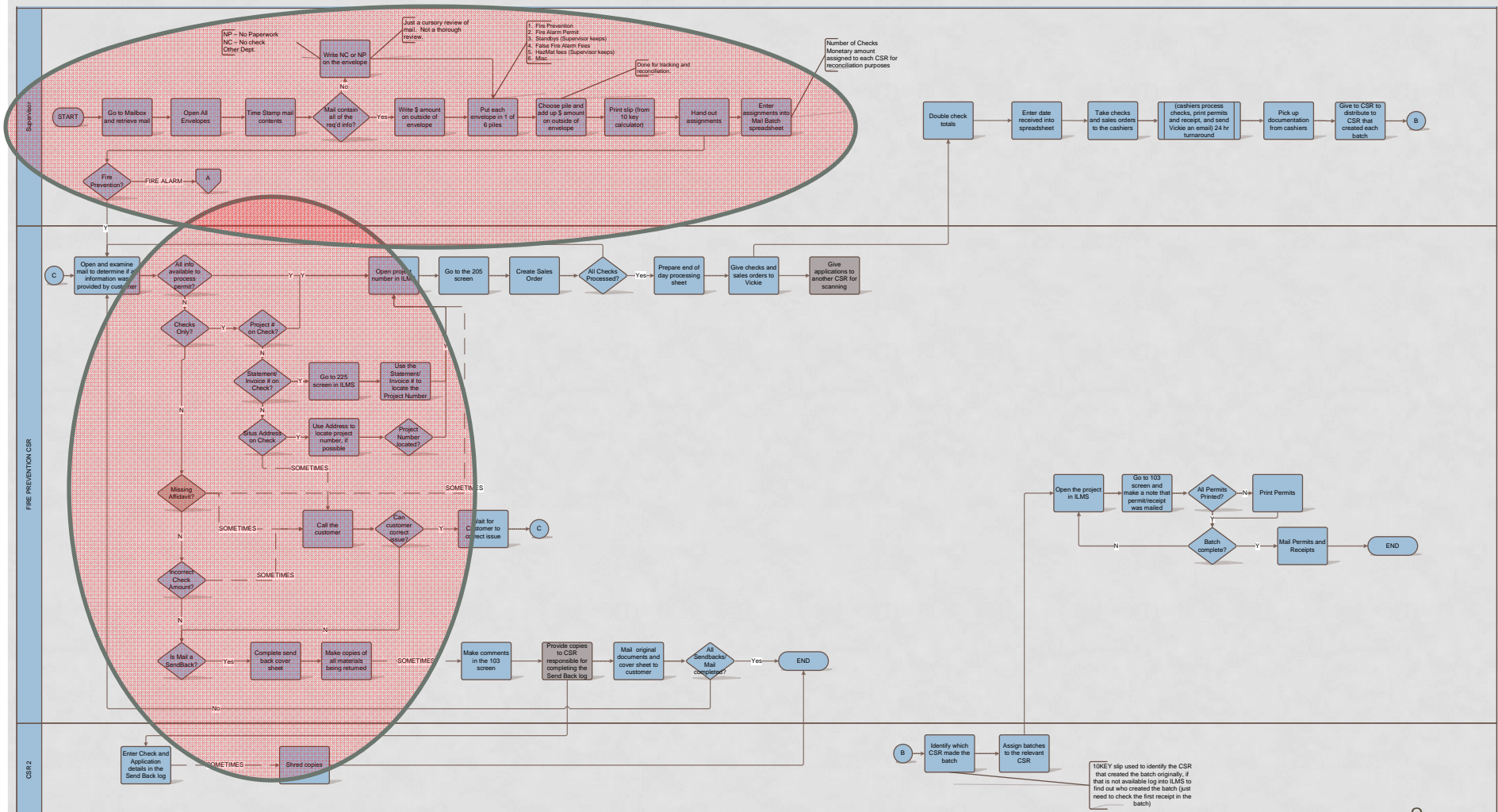
DEFINE: SIPOC

Supplier	Input	Process	Output	Customer
<ul style="list-style-type: none"> Facility Owner Permitting Supervisor Fire Inspector 	<ul style="list-style-type: none"> Mailed Permit Request Annual Renewal CSRs Supervisors Computers Databases 	<ol style="list-style-type: none"> CSR sends invoice to customer Customer receives invoice Customer renews permit via mail Supervisor receives and distributes mail CSR inputs permit into ILMS or Smart CM CSR prints permit CSR mails permit Customer receives permit 	<ul style="list-style-type: none"> Invoice Permit Receipt 	<ul style="list-style-type: none"> Facility Owner Fire inspector

MEASURE AND ANALYZE

MEASURE: CURRENT STATE PROCESS MAP

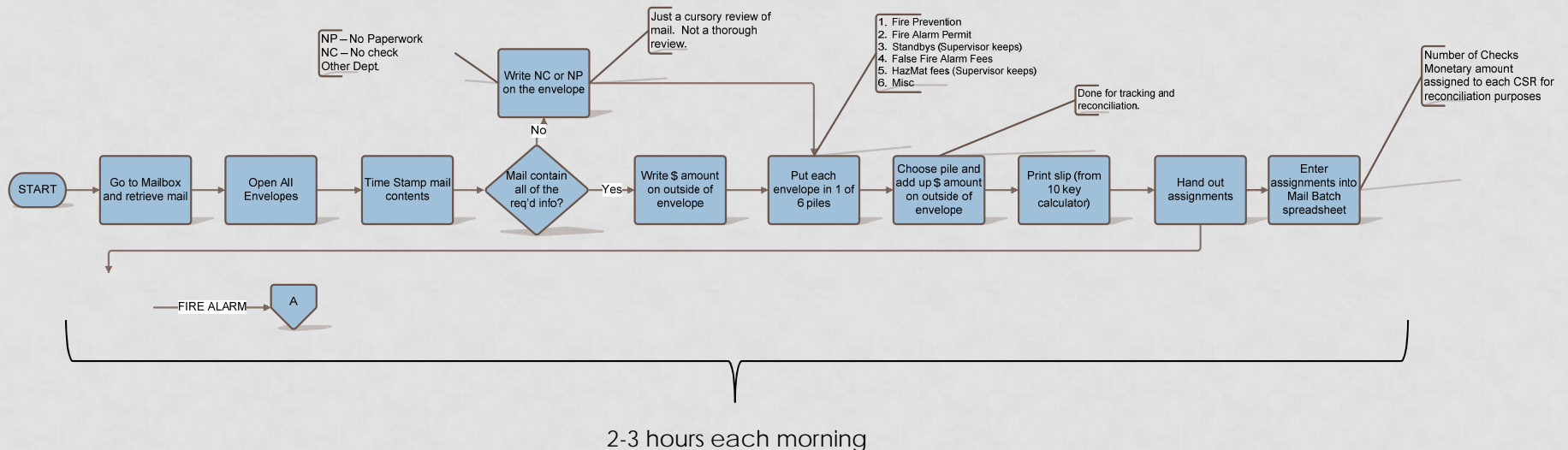
FIRE PREVENTION PERMITS MAIL PROCESSING



MEASURE: CURRENT STATE PROCESS MAP

FIRE PREVENTION PERMITS MAIL PROCESSING

HIGHLIGHTED AREAS



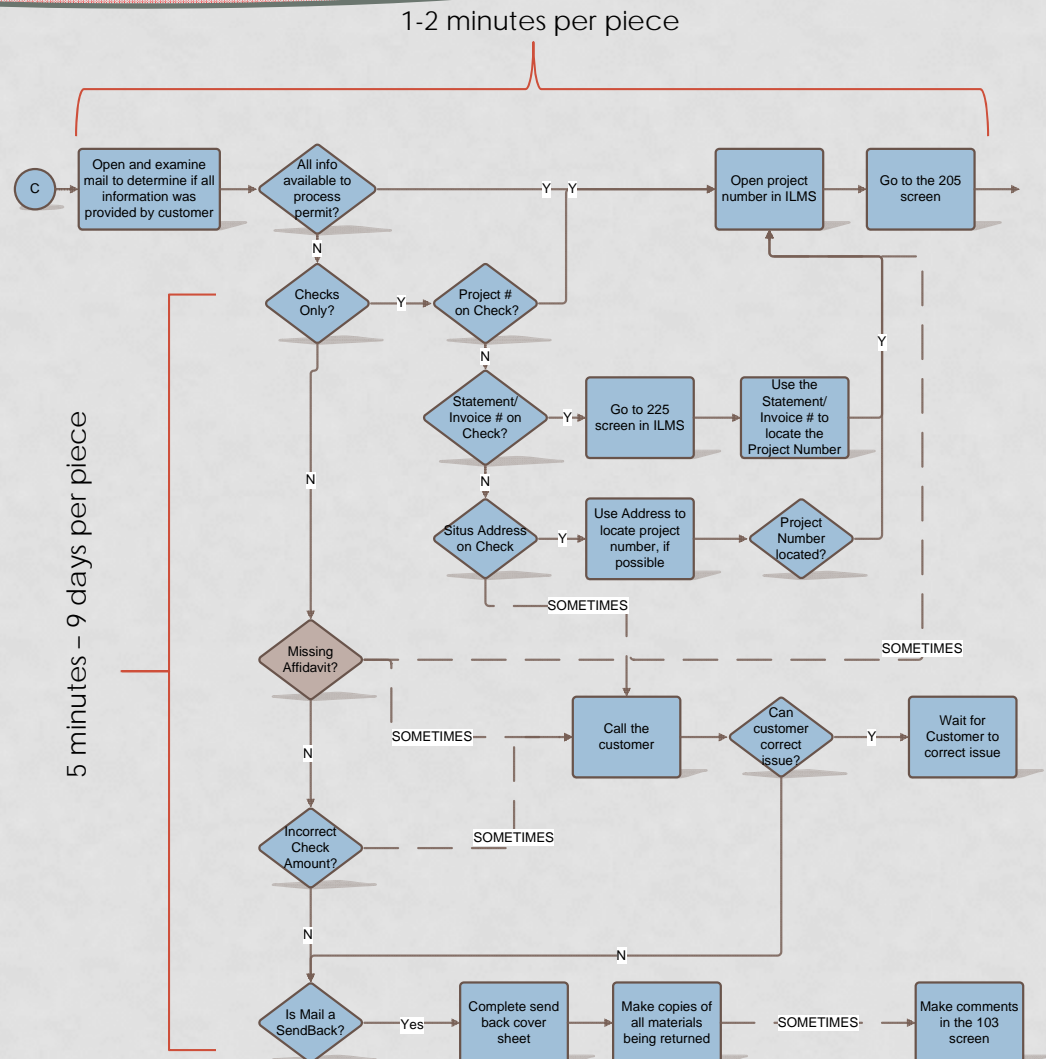
- Mail is assigned in batches to CSRs by the supervisor on a daily basis
- Mail is opened, batched, tallied by both monetary amount and number of pieces, and given to the CSR
 - This process takes anywhere from 2-3 hours each morning, resulting in 14-21 hours of CSR downtime
 - Mail batch sizes differ from CSR to CSR

MEASURE: CURRENT STATE PROCESS MAP

FIRE PREVENTION PERMITS MAIL PROCESSING

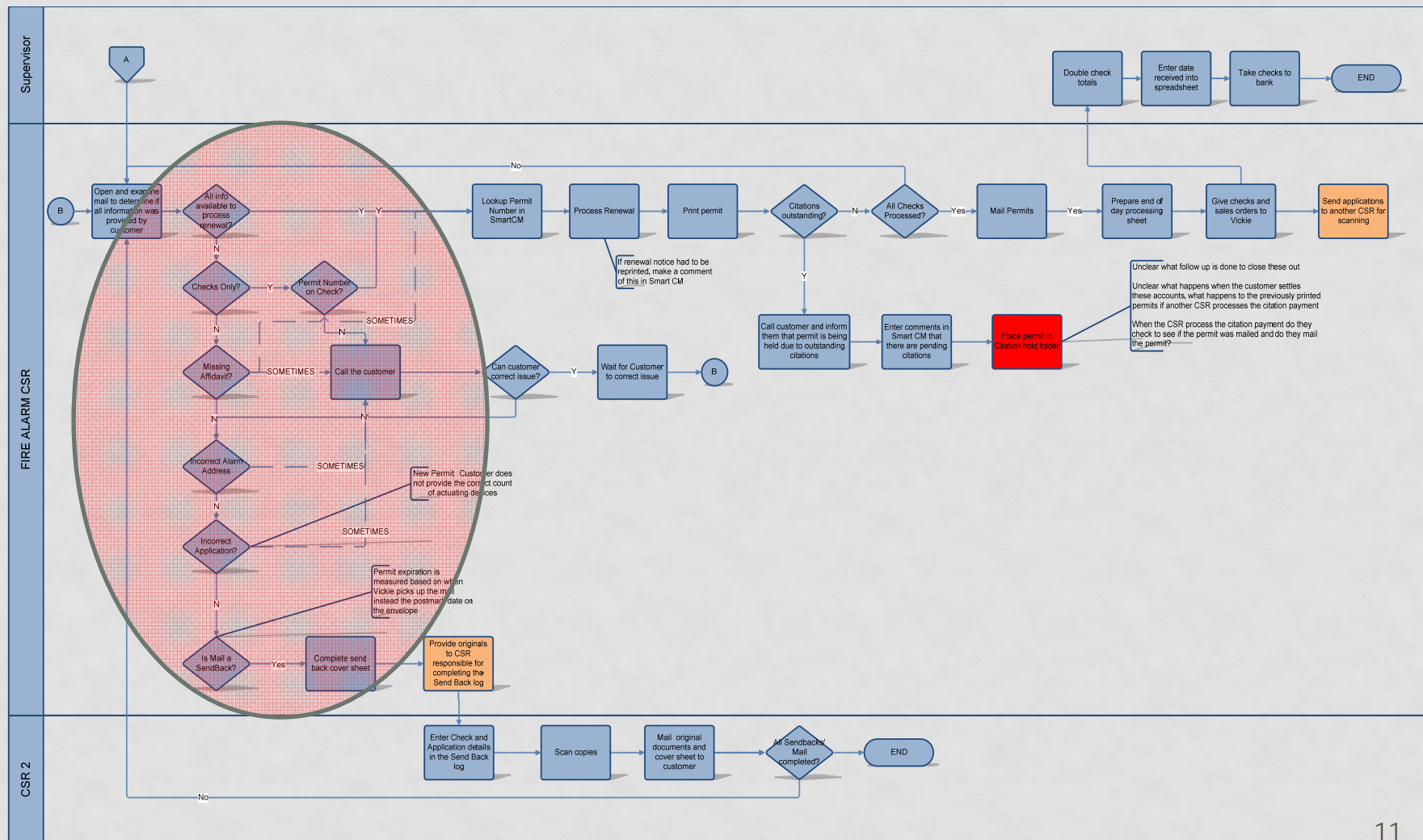
HIGHLIGHTED AREAS

- There is no standard method to process sendbacks
 - 7 CSRs processing 7 different ways
 - No real definition for a "sendback"
 - CSRs hold sendbacks waiting for customer to follow up
- The documentation of the sendbacks is not standard or consistent
 - At least 2 different people documenting
 - 2 different worksheets inconsistently maintained



MEASURE: CURRENT STATE PROCESS MAP

FIRE ALARM PERMITS MAIL PROCESSING

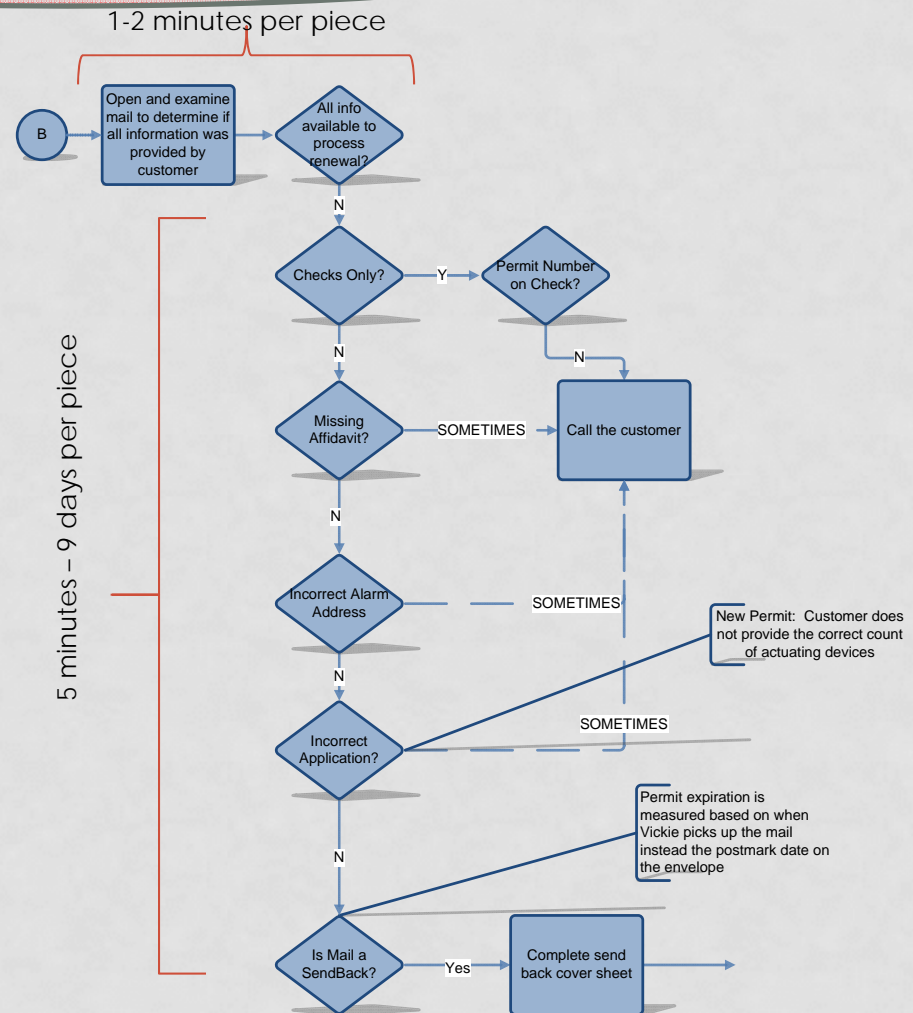


MEASURE: CURRENT STATE PROCESS MAP

FIRE ALARM PERMITS MAIL PROCESSING

HIGHLIGHTED AREAS

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 - At least 2 different people documenting
 - 2 different worksheets inconsistently maintained



MEASURE: CSR WORKLOAD CAPACITY

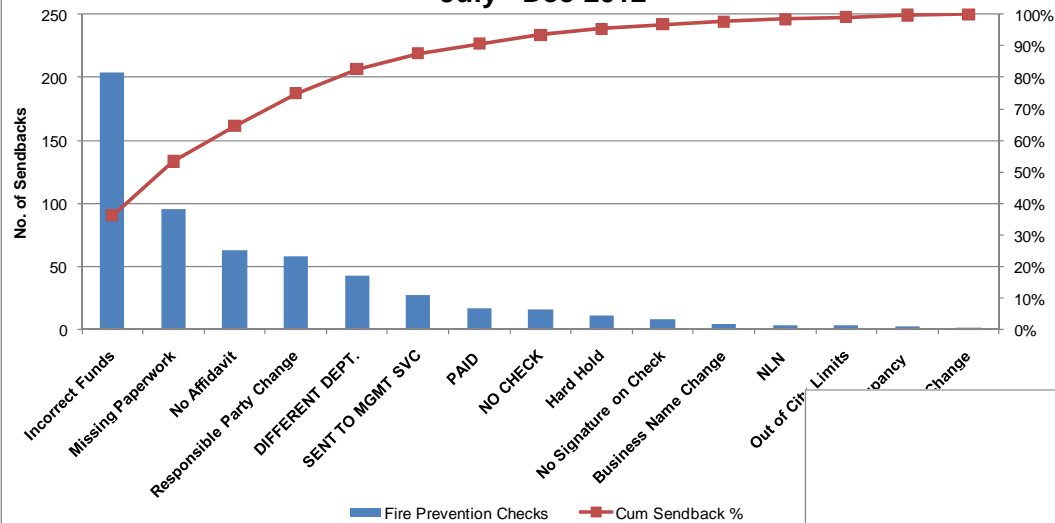
CSR	Available Daily Minutes (A)	Current Daily Mail Batch Size	Sendback Daily Mailing Batch Size	Walk-In Daily Batch Size	Permit Mailing Daily Batch Size	Current CSR Productive Time (mins/day) (B)	CSR Utilization (=B/A)
CP	405	5		7	5	221	55%
DF	405	12	5	2	12	391	97%
ED	405	13		4	13	335	83%
EB	405	7	2	7	7	269	66%
MV	405	4		6	4	176	44%
RW	405	12		7	12	328	81%
WT	405	5		6	5	206	51%
		58					

- CSRs are responsible for processing the daily incoming mail, sendbacks, handling walk-in customers, processing outgoing mail and answering incoming phone calls
- Based on how work is being processed by the CSRs some of them appear to be at capacity
- Note: CP, MV, EB, and WT handle additional responsibilities not represented in the utilization numbers

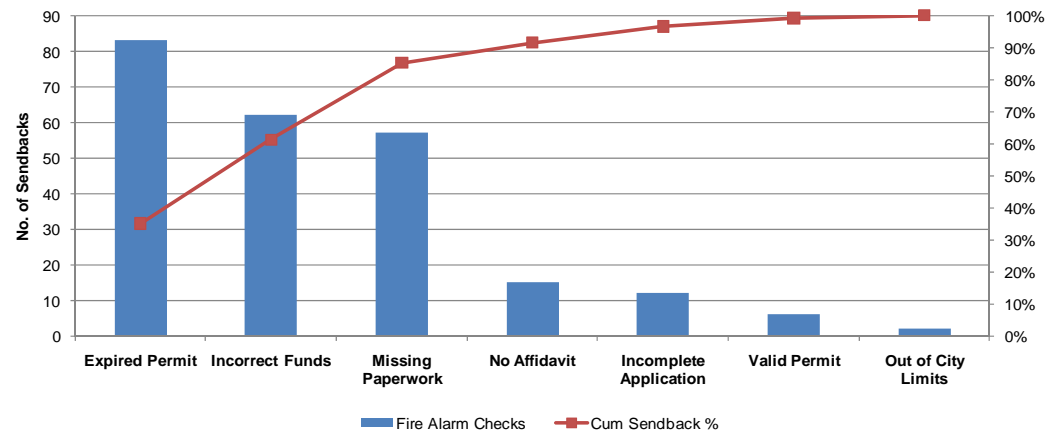
MEASURE: SENDBACKS

PIECES OF MAIL UNABLE TO BE PROCESSED BECAUSE OF INCOMPLETE OR INACCURATE INFORMATION

**Fire Prevention Send Backs
July - Dec 2012**

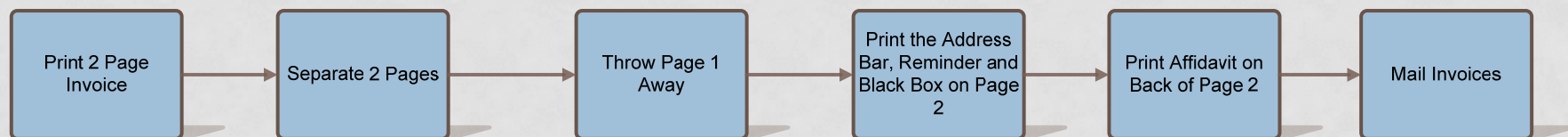


**Fire Alarm Send Backs
July - Dec 2012**

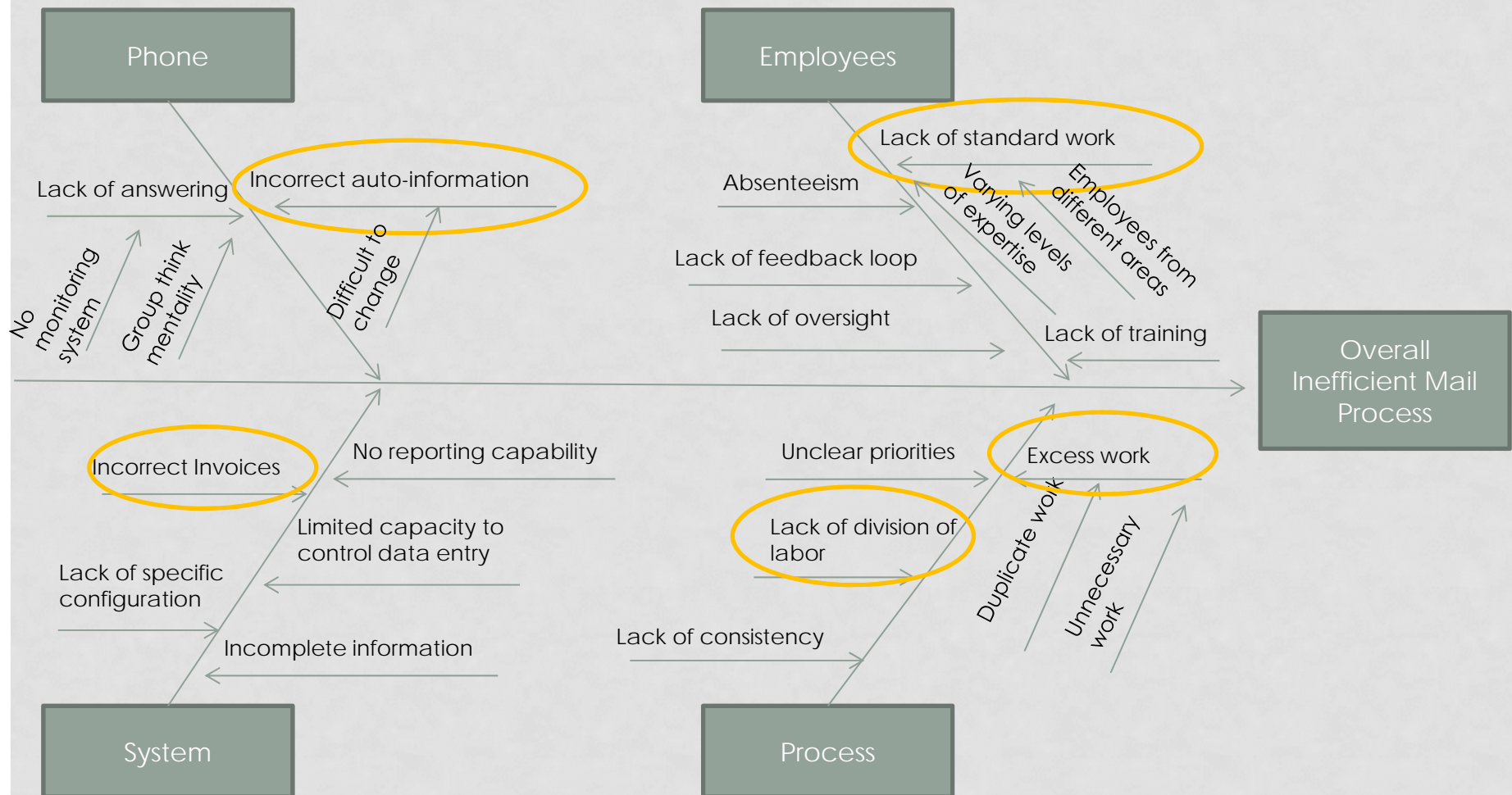


MEASURE: CURRENT STATE PROCESS MAP INVOICING

- The invoicing process is quite onerous
- Time studies showed it takes 4 to 8+ hours to process monthly invoices
 - Print monthly invoices (1,200-2,000 pages)
 - Separate 2 pages (only use 1 page)
 - Re-print address, reminder and block over barcode on front
 - Re-print affidavit on back



ANALYZE: ROOT CAUSE ANALYSIS



ANALYZE: CURRENT STATE PROCESS MAP

FIRE PERMITS MAIL PROCESSING

- Supervisor takes over 2 hours to distribute mail due to a lengthy control process
 - Mail is assigned in batches to CSRs by the supervisor on a daily basis
 - Mail is opened, batched, tallied by both monetary amount and number of pieces, and given to the CSR
 - This process takes anywhere from 2-3 hours each morning, resulting in 14-21 hours of combined downtime for the CSRs waiting on the mail
 - Mail batch sizes differed from CSR to CSR
 - CSRs were not always processing mail by the end of the day

Because of the lack of consistent reporting on mail batches, measuring standard mail batches and processing time was originally impossible

- Obvious sendbacks are distributed into the “normal” mail process
- Each CSR chooses how to process sendbacks as they received them
- Each CSR mails their own finished permits whenever they chose to do so

ANALYZE: TIME STUDY MAIL PROCESSING

- Time studies showed no variation in permit process time for simple fire prevention permits or fire alarm permits
 - When information was complete and accurate, processing time was under 2 minutes per piece of mail
- However, when information was incomplete, CSRs had a variety of ways to handle each piece, thus causing significant variation and inconsistencies in mail processing

ANALYZE: SENDBACKS

- Process time varied from 5 minutes to 9 days
- There is no standard method to process sendbacks
 - 7 CSRs processing 7 different ways
 - No real definition for a “sendback”
 - CSRs sit on sendbacks waiting for customer to follow up
- The documentation of the sendbacks is not standard or consistent
 - At least 2 different people documenting
 - 2 different worksheets inconsistently maintained
- Available records showed at least 10% of daily mail volume was being sent back
 - The actual number of sendbacks may be larger since the handling of sendbacks is not consistent

ANALYZE: CSR DUTIES

- 2 different CSRs were compiling sendback information, leading to differences in how the data was collected
- 2 different CSRs were responsible for a weekly scanning of documentation, leading to time away from their desks to complete other tasks

DF	CP	EB	MV	RW	ED	WT
Compile FA Sendbacks	Fire Alarm Renewal Notices False Fire Alarm Notices	Compile FP Sendbacks Vickie's Backup Monica Backup FA Scans	Reconciliation Standbys HazMat	FP Renewal Notices (monthly)	FP Scans	Standbys Inspector Faxes
Process Sendbacks Process Mail Payments Walk ins Phone	Process Sendbacks Process Mail Payments Walk ins Phone	Process Sendbacks Process Mail Payments Walk ins Phone	Process Sendbacks Process Mail Payments Walk ins Phone	Process Sendbacks Process Mail Payments Walk ins Phone	Process Sendbacks Process Mail Payments Walk ins Phone	Process Sendbacks Process Mail Payments Walk ins Phone
Mail Permits/Receipts	Mail Permits/Receipts	Mail Permits/Receipts	Mail Permits/Receipts	Mail Permits/Receipts	Mail Permits/Receipts	Mail Permits/Receipts

- All CSRs were processing sendbacks, leading to differences in how sendbacks were handled and length of time it took to process them
- All CSRs were responsible for an end of day permit mailing, leading to time away from their desks to complete other tasks
- Some CSRs were not using the mail machine to process the outgoing permit mail

ANALYZE: INVOICING

- Root cause analysis outlined several issues with ILMS and the invoice design
- It was determined that the invoice was an important area to fix as it was not meeting the needs of the group, took an exorbitant time to process and was confusing customers
 - 2 page invoice
 - Incorrect Address
 - Unnecessary and confusing barcode
 - Lack of affidavit on actual invoice
 - Unclear permit fee
 - Confusing 'Responsible Party' language

EXAMPLE: INVOICING



CITY OF HOUSTON

Permit Office - Fire Section

1002 Washington Ave., Houston, Texas 77002 832-394-8811

Bill for Fire Prevention Permit

CARDON AUTO REPAIR & BODY
ANNE, ADAM
8210 PINEMONT
HOUSTON, TX 77040

Statement: 0461563
Page: 2
Printed: 18-SEP-2012
Project No: 08048104
License No: 00118416

Subject: 8210 PINEMONT DR # . 77040

Complete this form, make any corrections, and return it with a check or money order. In envelope provided. If you need help, call 832-394-8811.

Return the original of this form with your payment to 'City of Houston -- Permit Office'. If a renewal of this permit has already been mailed, disregard this notice.

Permit Type: F7 - FC STRG&USE GE

☒ RENEW THIS PERMIT Enclose payment in the amount of 260.00
Make payable to: City of Houston

☐ THIS PERMIT IS NO LONGER REQUIRED (Explain on Back)

If any of the information on this form is incorrect, make corrections below.

Company Name: _____

Mailing Address: _____

Mailing City: _____ State: _____ Zip: _____

Phone: (____) _____ Federal Tax Id: _____

Permit Address: _____

Responsible Person Signature: _____ Zip: _____

Responsible Person Printed Name: _____

Property Owner's Name: _____

This renewal form must be signed by the person responsible.

For new responsible person complete affidavit on back. The permit fee includes an Administration fee of \$25.80

Please make check payable to City of Houston and address as follows:

City of Houston
Fire Department
P.O. Box 3625
Houston, Texas 77253

P.O. Box 3625, Houston, Texas 77253

For new responsible person complete affidavit on back. The permit fee includes an Administration fee.

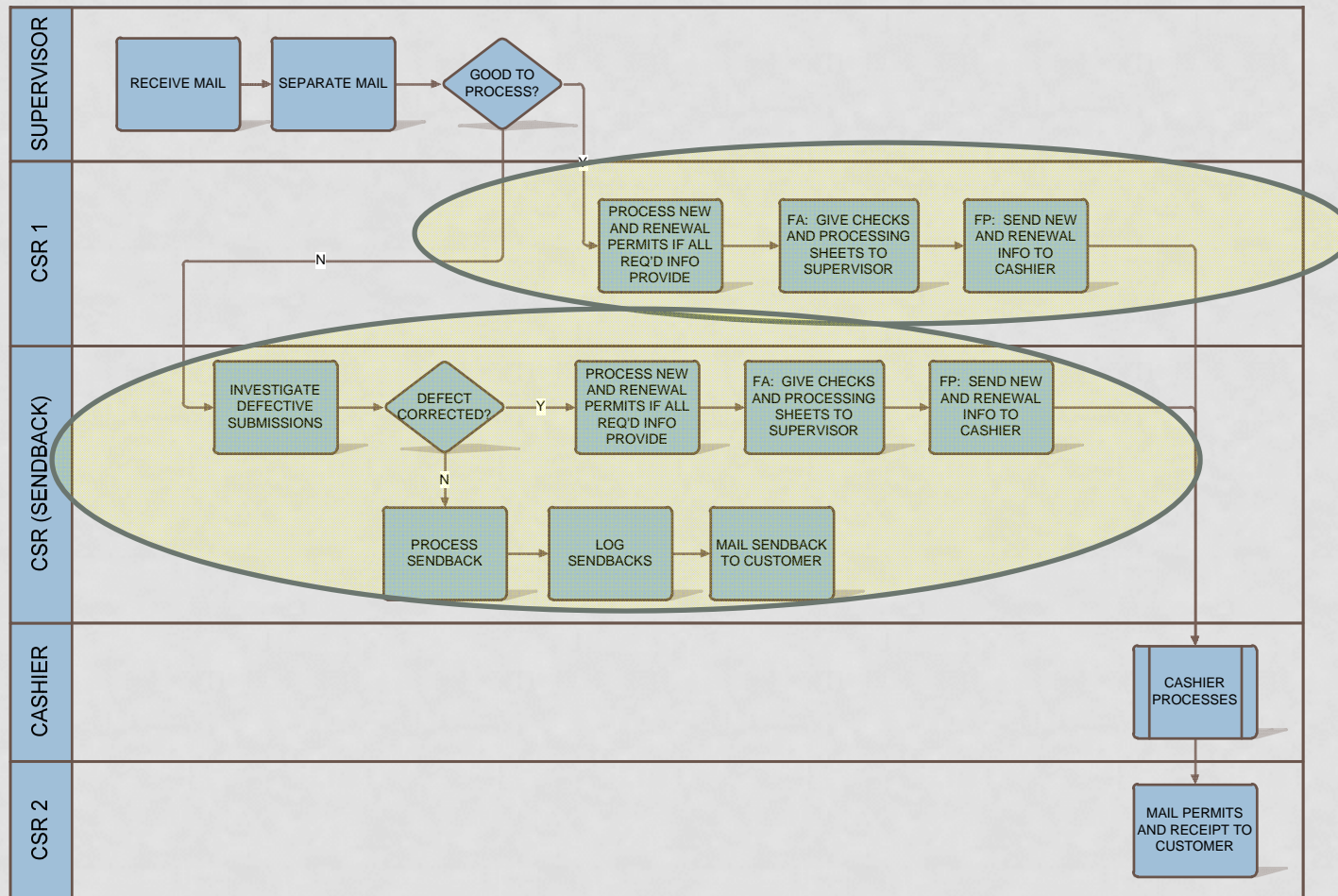
Please make check payable to City of Houston and remit as follows:

City of Houston
Fire Department
P.O. Box 3625
Houston, Texas 77253

IMPROVE

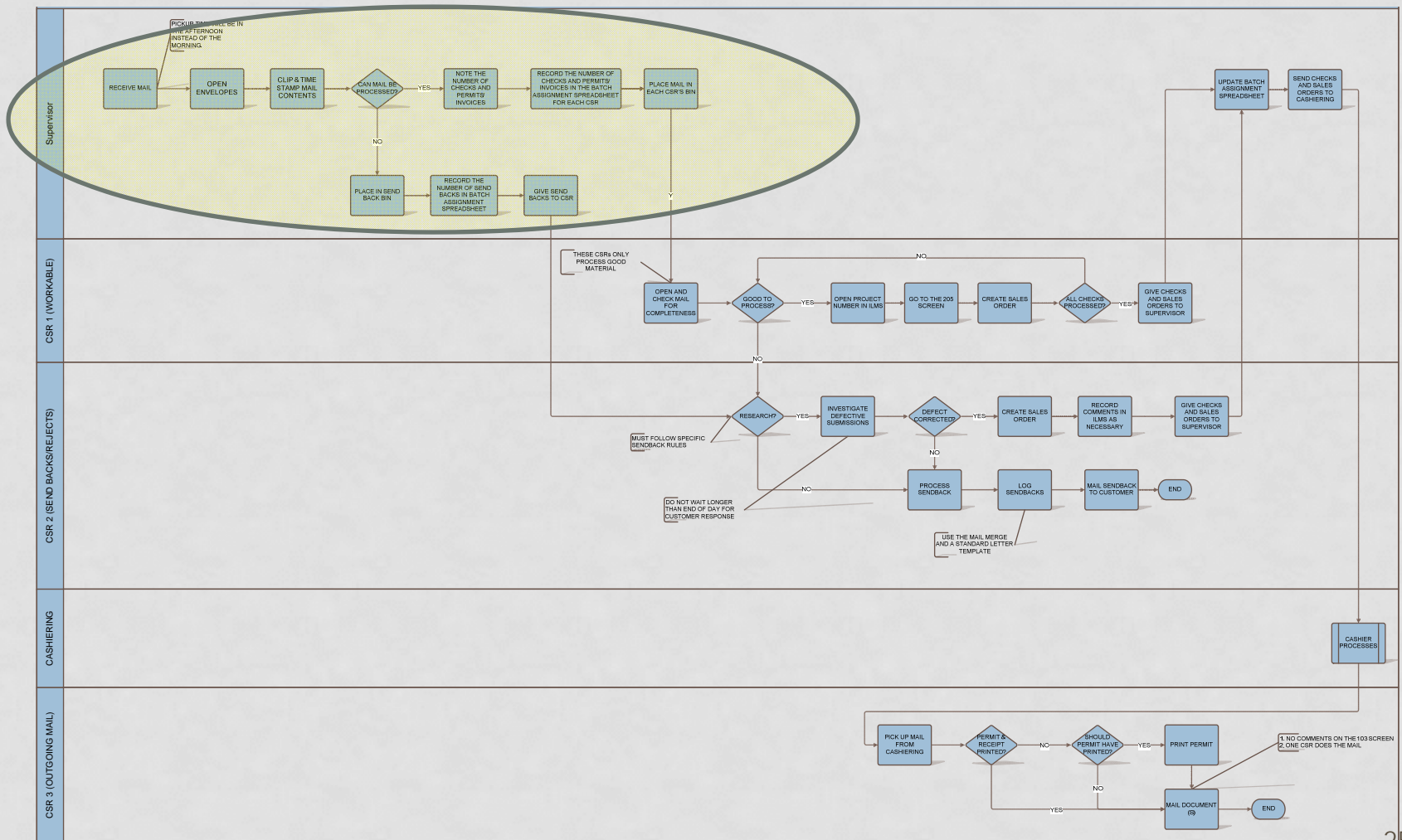
IMPROVE: FUTURE STATE PROCESS MAP

HIGH LEVEL ALL MAIL PROCESSING



IMPROVE: FUTURE STATE PROCESS MAP

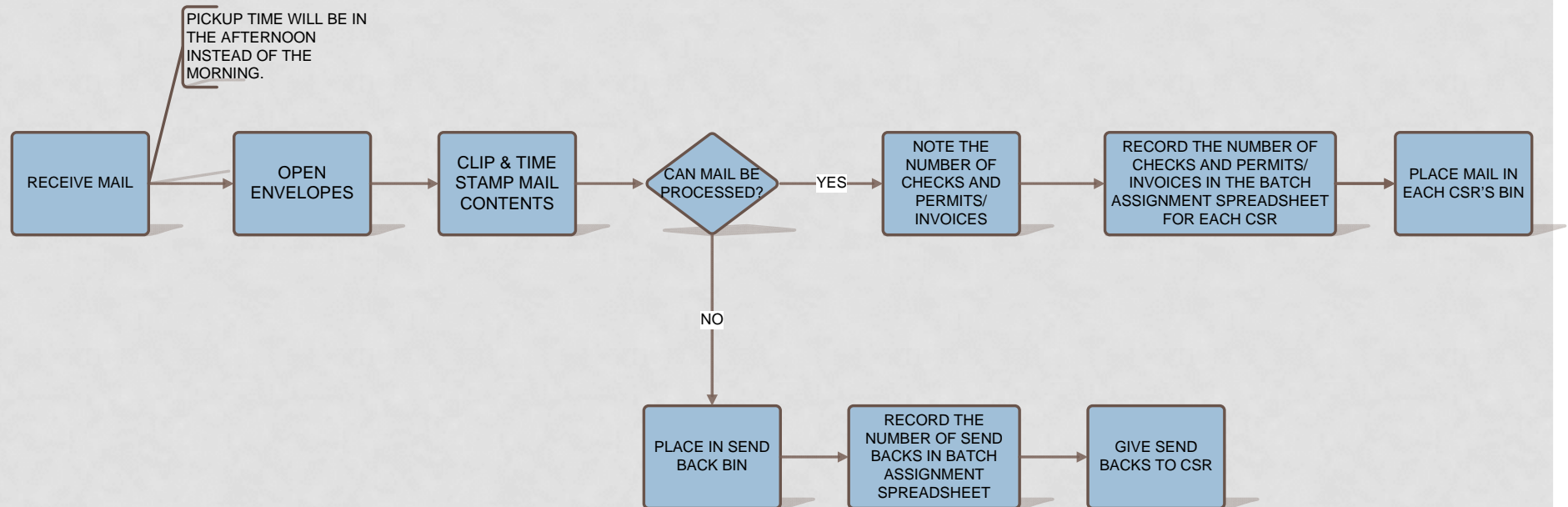
FIRE PREVENTION PERMITS MAIL PROCESSING



IMPROVE: FUTURE STATE PROCESS MAP

FIRE PREVENTION PERMITS MAIL PROCESSING

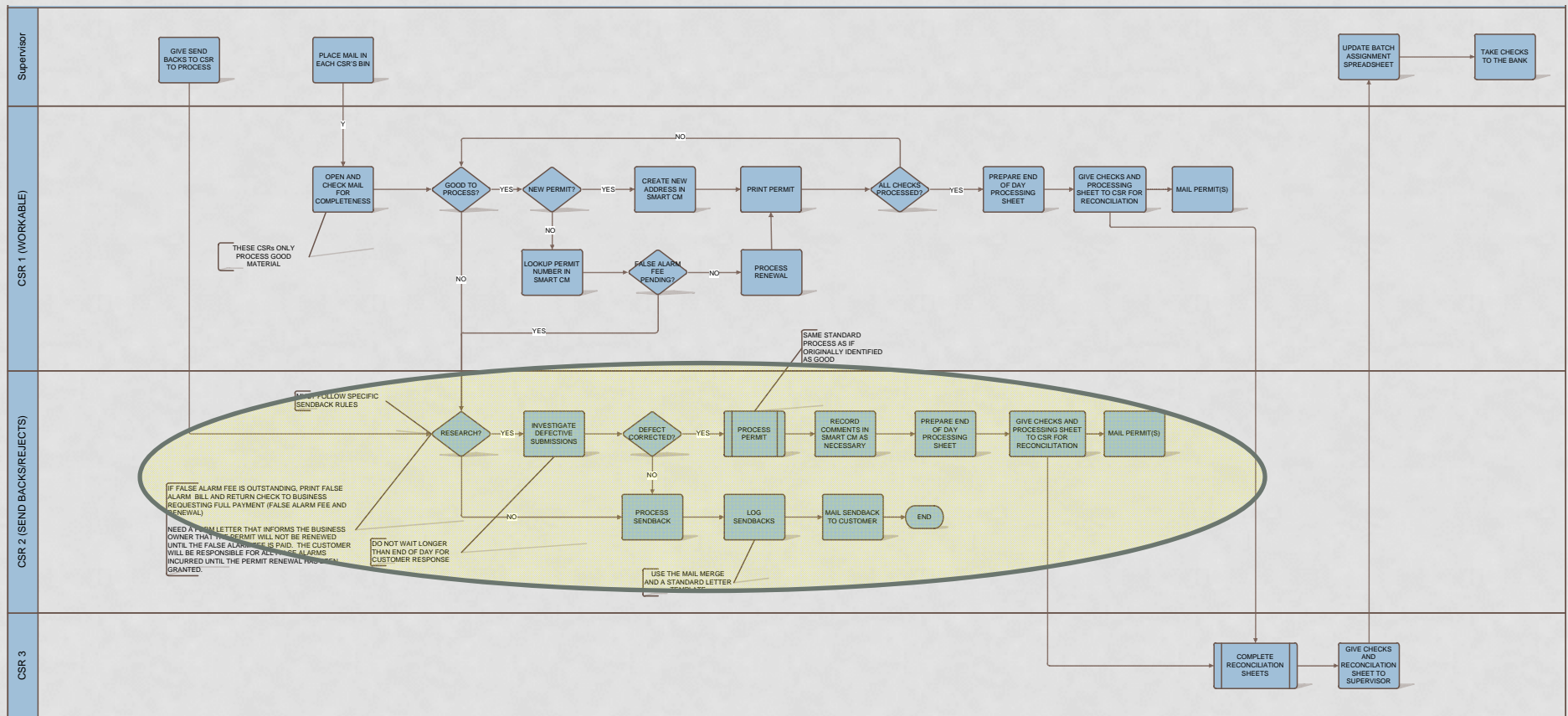
IMPROVED AREAS



- Eliminated unnecessary work in the mail sort and assignment process
- Eliminated the distribution of obvious sendbacks to all CSRs
- Reduced time to sort and assign mail by 75% to 30-45 minutes

IMPROVE: FUTURE STATE PROCESS MAP

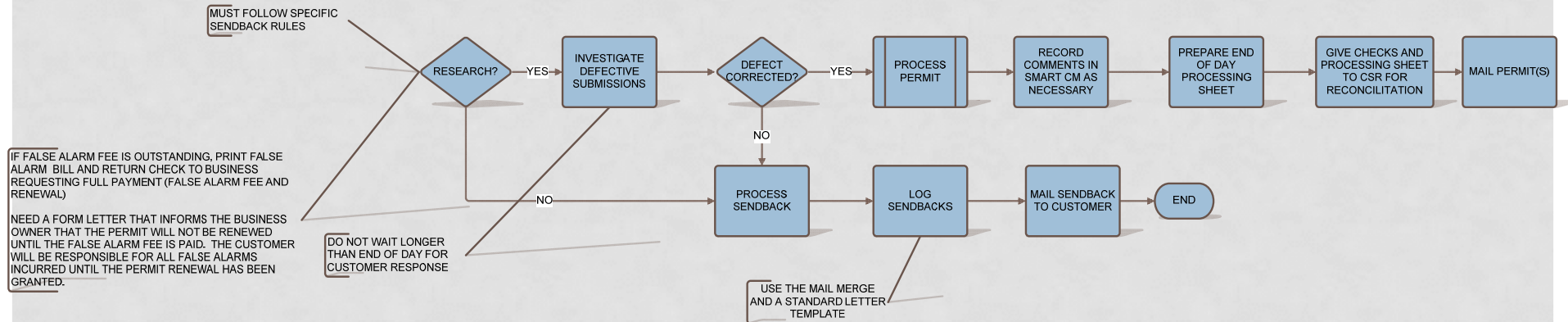
FIRE ALARM PERMITS MAIL PROCESSING



IMPROVE: FUTURE STATE PROCESS MAP

FIRE ALARM PERMITS MAIL PROCESSING

IMPROVED AREAS



- Created a new definition of a sendback
- Implemented a new direction of what to do when CSRs encounter a sendback

IMPROVE: SENDBACK RULES

- New definition of a sendback
- New direction of what to do when CSRs encounter a sendback
- New protocols to take obvious sendbacks out of the mail immediately
- Updated and combined sendback log
 - Created standard reasons for sendbacks in a drop down menu
 - Created new letter with mail merge

Automatic Send Back – no research required:

- Address Change
- Already Paid/Valid Permit
- Business Name Change
- Expired Fire Alarm Permit
- Incorrect Funds
- No form of Payment
- No Longer Need
- No Signature on Check
- Occupancy Issues
- Outside City Limits
- Reinspection Fee Pending
-

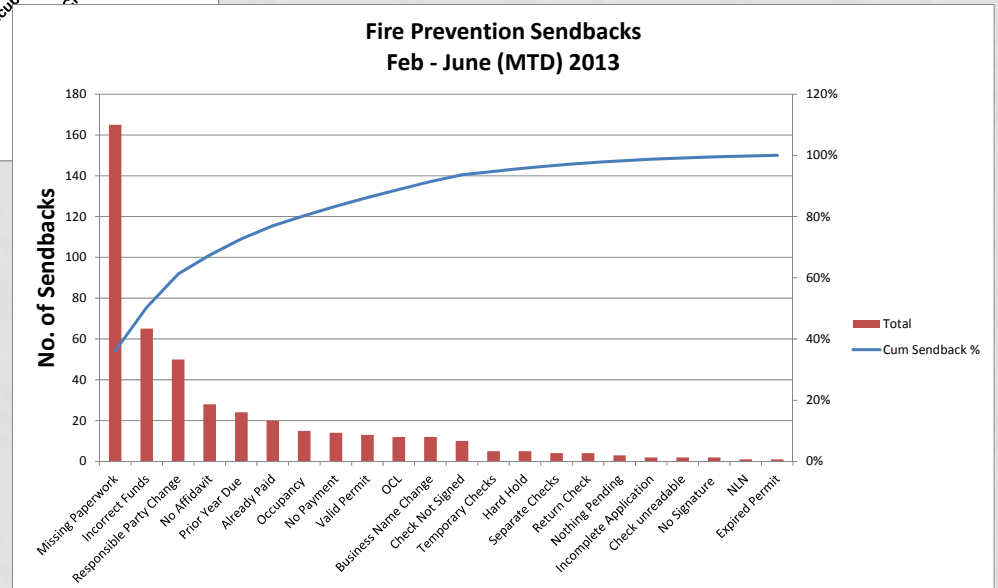
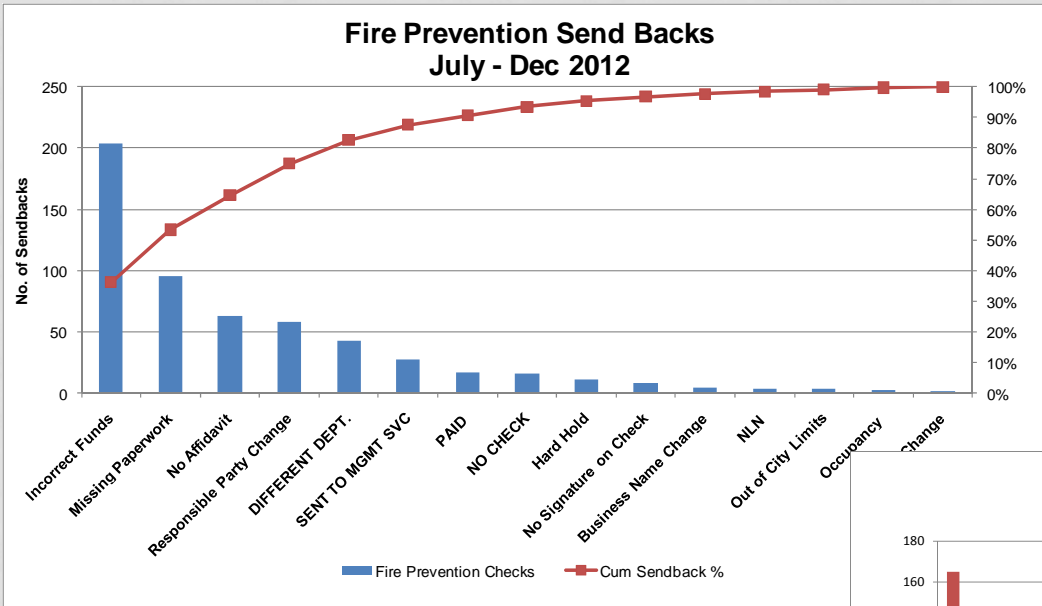
Interoffice Transfer:

- Different Department
-

Further Investigation – Phone call or ILMS research (24hr. hold max unless directed by Supervisor):

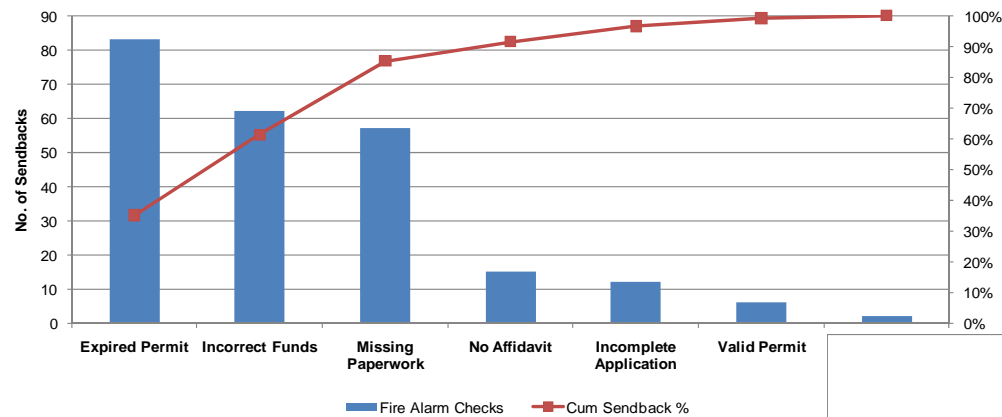
- Customer Owes for Back Years (check with Vickie or Diane)
- Hard Hold
- Missing Paperwork (Check Only)
- Project/Statement/Invoice Number on Check (ILMS research)
- Situs Address on Check (Phone Call)
- Missing Paperwork (Incomplete or Confusing Application)
- New Permit, no Affidavit
- Renewal Permit, Responsible Party Changed

IMPROVE: FIRE PREVENTION SENDBACKS

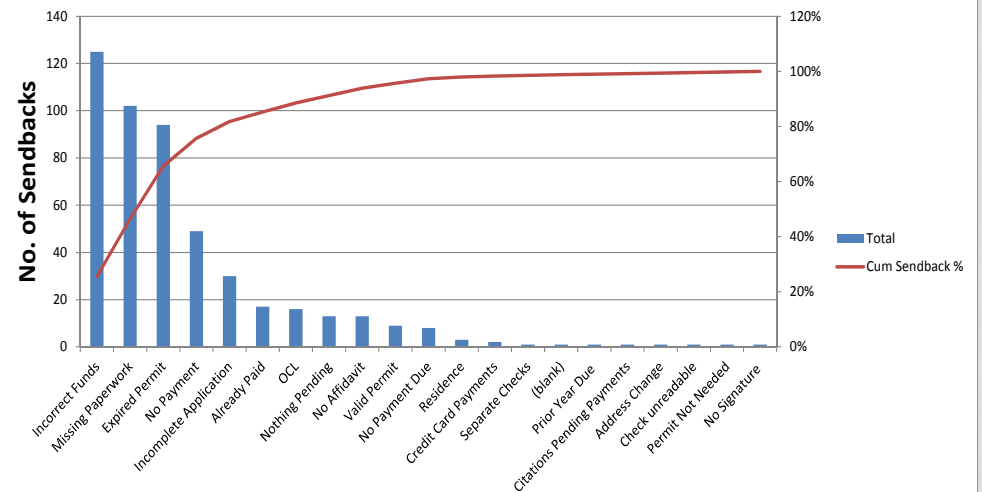


IMPROVE: FIRE ALARM SENDBACKS

**Fire Alarm Send Backs
July - Dec 2012**



**Fire Alarm Sendbacks
Feb - June (MTD) 2013**



IMPROVE: STANDARD WORK

Created standard of work

- CSRs
 - Reprioritized CSR duties and workload
 - CSRs processing mail do not process sendbacks
 - Assigned weekly sendback processing to one CSR
 - Standardized the sendback worksheet (sendback log)
 - Implemented sendback rules
 - Assigned permit mailing to one CSRs (using mail machine)
- Supervisors
 - Updated mail batch spreadsheet
 - Eliminated unnecessary work in the mail sort and assignment process
 - Reduced time to sort and assign mail by 75% to 30-45 minutes

- Realigned priorities and assignments to ensure standard work
 - 1 CSR does all scanning
 - 2 CSRs trade off collecting and sending all mail
 - 2 CSRs trade off documenting and processing of sendbacks

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IMPROVE: CSR WORKLOAD UTILIZATION

CSR	Available Daily Minutes (A)	Previous Daily Mail Batch Size	New Daily Mail Batch Size	% Change	Previous CSR Productive Time (mins/day) (B)	New CSR Productive Time (mins/day) (C)	Previous CSR Utilization (=B/A)	New CSR Utilization (=C/A)
CP	405	5	9	69%	221	260	55%	64%
DF	405	12	17	41%	391	225	97%	55%
ED	405	13	21	63%	335	149	83%	37%
EB	405	7	15	122%	269	273	66%	68%
MV	405	4	14	239%	176	146	44%	36%
RW	405	12	21	73%	328	154	81%	38%
WT	405	5	15	183%	206	155	51%	38%
		58	111					

- Key changes to the CSR duties and standard work surrounding sendbacks allows the CSRs to handle the increased mail volume that has more than doubled.
- CSRs could potentially handle around 3 times as much mail with current number of employees

IMPROVE: INVOICE

- Changes to invoice
 - Reduced invoice to 1 page
 - Removed barcode
 - Added affidavit
 - Updated address and phone number
 - Clarified permit type and cost
 - Clearly identified the 'Responsible Party'
- CSR now processes invoices in 45 – 60 minutes (approx 86% reduction in processing time)



CITY OF HOUSTON

Permit Office: Fire Section
 Visit us: 1002 Washington Avenue, Houston, Texas 77002 Phone: (832) 394-8811
 Mail to: City of Houston Fire Department PO Box 3625 Houston, TX 77253

Bill for Fire Prevention Permit

FAILURE TO PAY THIS BILL BEFORE THE EXPIRATION DATE MAY RESULT IN A CITATION.

MCDERMONTT, INC. - AUDITORIUM
 ABBOTT, FLORENCE
 757 N ELDRIDGE PKWY
 HOUSTON, TX 77040

Permit Address: 757 N ELDRIDGE PKY #F L 14 77079

Permit Type: P2 (Public Assembly)

L) RENEW THIS PERMIT

Statement 0450582
 Printed: 31-OCT-20 12
 Project No: 12072397
 License No: 001496

Enclose Payment in the amount of: \$260.00
 This permit fee already includes the administrative fee.
 Please make checks payable to: City of Houston
 Our fees are not refundable.

LJ THIS PERMIT IS NO LONGER REQUIRED (Please explain on back)

If any information on this form is incorrect, please make corrections below. *This renewal form must be signed by the responsible person, ABBOTT, FLORENCE, and mailed with your payment.*

Company Name: _____

Mailing Address: _____

Mailing City: _____ State: _____ Zip: _____

Phone: _____ Federal Tax ID: _____

Permit Address: _____

Responsible Person Printed Name**: _____

Responsible Person Signature**: _____

If there is a new responsible person, please complete the affidavit below.

THE STATE OF TEXAS	§	Deed Restrictions
COUNTY OF HARRIS	§	and Law Compliance
		Affidavit

Before me the undersigned a _____ who being first duly sworn by me

Deposed and said: _____ type or legibly print name of affiant

I understand and agree that it is my responsibility to comply with all deed restrictions and city, state and federal laws, regulations, or ordinances concerning any activity authorized by the permit(s) requested in the application(s) to which this affidavit appertains and concerning any land or place where such activities may be conducted.

I also understand and agree that the City of Houston, by issuing the permit(s) for which I am applying, does not excuse or approve of any violations of deed restrictions, or of city, state or federal laws, regulations or ordinance and that any permit will be void in the event that it is issued in violation thereof.

I fully understand that if any permit for which I am applying is issued, the City of Houston or any other appropriated entity may institute legal proceedings against me if I violate any deed restriction or any city, state or federal law, regulations or ordinance.

To the extent that this affidavit is made on behalf of a Corporation or for the benefit of a corporation or for the benefit of any person(s) other than myself, I certify that I have advised them of the content of this affidavit and that I am duly authorized to execute the same as the act and deed of the applicant or persons.

NOTARY SEAL _____

Signature of Affiant _____ Date _____

To certify which, release my hand and seal of office this _____ Day of _____, 20 _____

Notary Public in and for the State of Texas

Rev 02/13/10

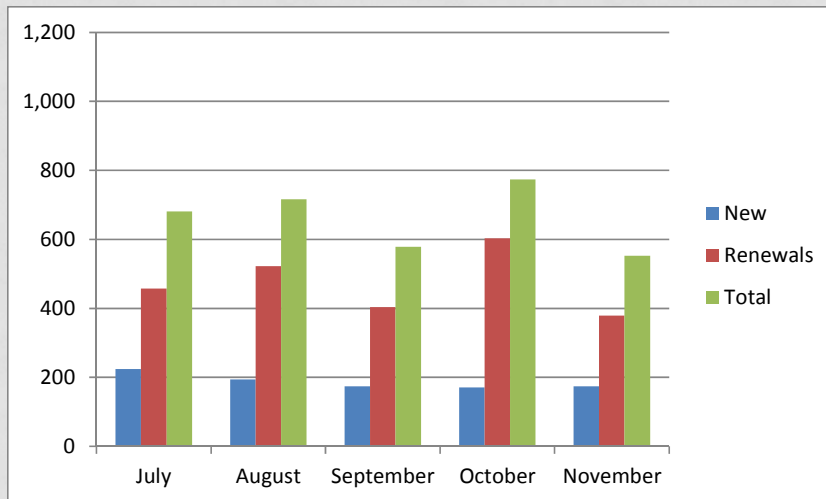
IMPROVE: JUST DO IT

PHONE SYSTEM UPDATE

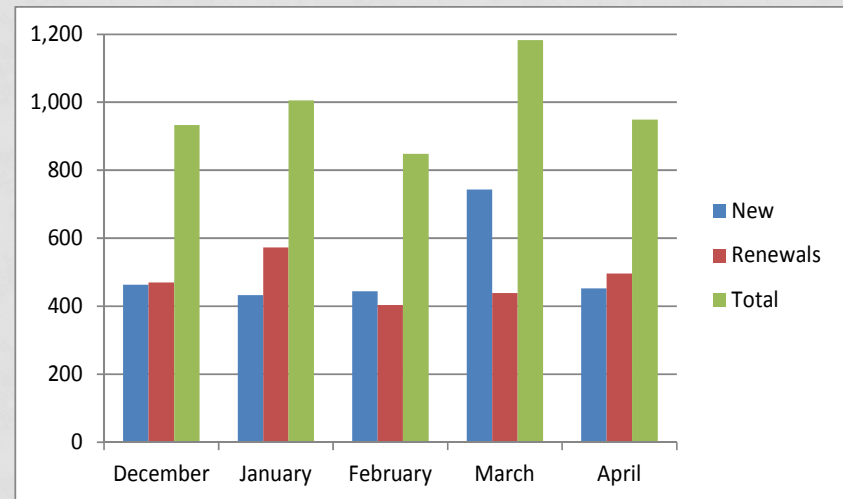
- Changes to phone system
 - Changed information to include answers to calls most often received
 - Updated departmental information
 - Updated phone and fax numbers

IMPROVE: OVERALL FIRE ALARM PERMIT INCREASE

After mailing over 15,500 pieces of mail starting mid-November, new and renewal fire alarm permit volume increased by 49%, 17% of which we can directly attribute to the mailing.



	New	Renewals	Total
July	224	457	681
August	194	522	716
September	174	404	578
October	171	603	774
November	174	379	553
	937	2,365	3,302

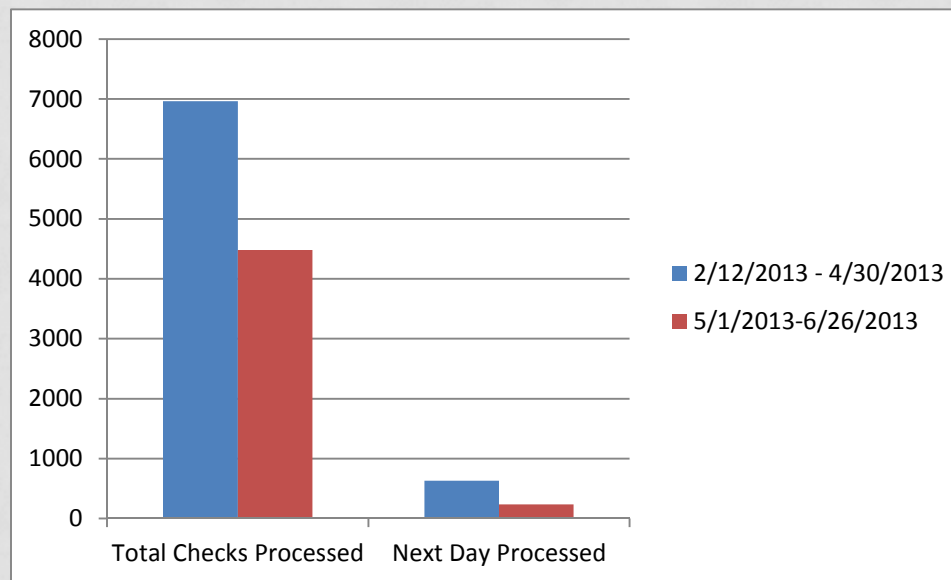


	New	Renewals	Total
December	463	470	933
January	433	573	1,006
February	444	404	848
March	744	439	1,183
April	453	496	949
	2,537	2,382	4,919

IMPROVE: MAIL BATCH SAME DAY PROCESSING

We began tracking same day processing of the mail on February 12, 2013.

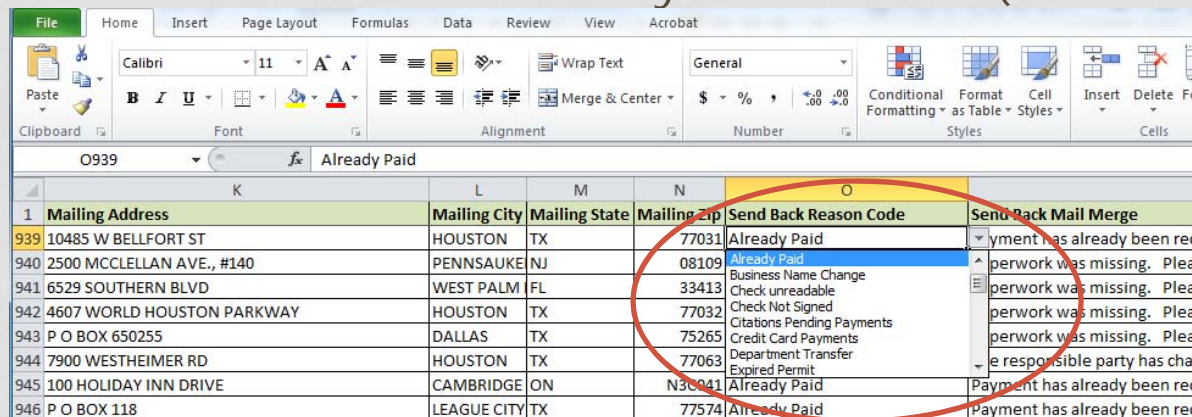
- For the first 10 weeks of tracking, (February 12, 2013 – April 30, 2013) 9% of the mail was NOT processed same day.
- For the following 8 weeks of tracking (May 1, 2013 – June 26, 2013) 5% of the mail was NOT processed same day



CONTROL

CONTROL: IMPROVEMENTS DOCUMENTATION AND ERROR PROOFING

- Mail batch log
 - Simplified log to record daily incoming mail assignments
 - Only recording data that is needed
- Sendback log
 - Standard worksheet
 - Standard reason codes in drop down that can be easily tracked
 - Standard mail merge
 - Pivot table to track monthly sendbacks (ref: slide 30)



	K	L	M	N	O	P
	Mailing Address	Mailing City	Mailing State	Mailing Zip	Send Back Reason Code	Send Back Mail Merge
939	10485 W BELLFORT ST	HOUSTON	TX	77031	Already Paid	Payment has already been rec
940	2500 MCCLELLAN AVE., #140	PENNSAUK	NJ	08109	Already Paid	perwork was missing. Plea
941	6529 SOUTHERN BLVD	WEST PALM	FL	33413	Check unreadable	perwork was missing. Plea
942	4607 WORLD HOUSTON PARKWAY	HOUSTON	TX	77032	Check Not Signed	perwork was missing. Plea
943	P O BOX 650255	DALLAS	TX	75265	Citations Pending Payments	perwork was missing. Plea
944	7900 WESTHEIMER RD	HOUSTON	TX	77063	Credit Card Payments	perwork was missing. Plea
945	100 HOLIDAY INN DRIVE	CAMBRIDGE	ON	N3C041	Department Transfer	the responsible party has cha
946	P O BOX 118	LEAGUE CITY	TX	77574	Expired Permit	Payment has already been rec
					Already Paid	Payment has already been rec

CONTROL: IMPROVEMENTS STANDARD WORK POLICIES AND PROCEDURES

- Processing
 - Ability to use Mail Batch spreadsheet to ensure mail is being processed in a timely fashion
 - Division of labor ensures that only certain people are responsible for specific duties
 - Sendback log ensures consistency in how sendbacks are processed and monitored

CONTROL: TRAINING

- All CSRs trained on standard work
- Specific CSRs trained on mail batch and sendback spreadsheets
- All back-ups trained according to their new roles
- Training documented for future hires

CONTROL: AUDIT, MONITOR & ALARM

- Audit
 - Sendback spreadsheet
 - Mail batch spreadsheet
- Monitor
 - Supervisor monitors daily activity via mail batch spreadsheet
 - Supervisor monitors pareto charts of sendbacks
- Alarm
 - Daily activity "diff" column via mail batch spreadsheet

Mail Received from 2nd Floor / Fire Prevention/ Permits									
Mail received from P.O. Box									
				Processe	Amount				
				Total	Returned Cks.				
# In Batch / Employee	Date	# of AP	# of Cks	Processed	Current	Next	Total	S.B	DIFF
Cynthia Potier	6/10/13	18	17	2,551.69	17		17		0
Wendy Taylor	6/10/13	21	15	1,849.86	15		15		0
Earlene Day	6/10/13	2	2	184.98	2		2		0
Diane Ford	6/11/13	38	38	11,629.34	38		38		0
Wendy Taylor	6/11/13	10	10	2,486.40	10		10		0
Monica Villanueva	6/11/13	14	14	7,215.60	14		14		0
Robin White	6/11/13	19	19	5,999.62	19		19		0
Cynthia Potier	6/11/13	9	9	4,519.59	9		9		0
Wendy Taylor	6/12/13	13	13	2,295.89	13		13		0

Q&A