# NYC DHS Shelter Capacity Dashboard Vision

## Executive Summary

The number of New York City homeless and those seeking temporary shelter has grown substantially over the past few years, creating significant challenges with respect to the task of ensuring that every person in need is assigned to an appropriate shelter on a nightly basis. DHS constantly experiences extremely tight shelter capacity, and regularly requires emergency expansions of capacity. The capacity constraints, the fact that actual demand is often not clear until midnight, along with the need to match clients to shelters that can address any special needs, makes it extremely important that DHS has an accurate and up to date understanding of shelter capacity and that we optimize the availability and use of existing units/beds.

Shelter Capacity Dashboard (CapDash) is a new software application that will give users the tools they need to create and manage plans that maximize benefits and minimize costs while fulfilling the DHS mission of providing appropriate shelter to every person in need. CapDash will leverage key statistical information such as known seasonal periods of high or low demand to improve the quality of forecasting. By incorporating regularly-updated data feeds from CARES and other key data sources both within and outside DHS, CapDash will also enable users to modify both future forecasts and current plans as they work with shelters throughout each evening. CapDash will enable users to test out alternative future scenarios and compare the costs of future plans given differing sets of assumptions, which may be used to help forecast DHS budgetary needs. Since offline units reduce capacity and impact both short-term and long-term capacity planning, CapDash will track offline units and the plans and timelines for bringing them back online. CapDash will provide the ability to reconcile purchases made by DHS Procurement Card (P-Card) holders to pay for maintenance and repair of units and to reserve commercial hotel rooms as needed. Lastly, CapDash will track reservations that are made with commercial hotels and their usage over time, and facilitate reconciliation with applicable P-Card charges.

Phase one of CapDash will focus on significantly improving our ability to forecast capacity and demand by leveraging statistics from prior years and applying seasonal patterns of high and low shelter utilization. Phase two of CapDash will incorporate P-Card transaction tracking, offline unit tracking, and commercial hotels reservation information. This will consolidate current systems such as the Commercial Hotels Tracker spreadsheet and provide a single system that both Intake and Vacancy Control (IVC, adults), and Homeless Emergency Referral Operation (HERO, families with children) can use to manage information not contained within CARES. Easy modification, undo, auditing, and reconciliation of up-to-the-minute information will also improve our ability to predict intra-day capacity changes, and improve accuracy of forecasts.

The new system will provide significant qualitative improvements. Overcoming neighborhood resistance to opening new shelters is extremely difficult, and the ability to provide side by side financial projections that demonstrate the impact of right sizing capacity will greatly strengthen the case. Having a system that is able to accurately capture commercial hotel reservations and usage (many of which are made at the last minute) will improve CPD’s ability to report, manage, and budget for this activity. Finally, the new system’s P-Card reconciliation capabilities will reduce DHS’s risks associated with reporting errors, mistaken/unused purchases, or malfeasance.

## Background

#### Agency Mission

The NYC Department of Homeless Services (DHS) operates an emergency shelter system for people without housing alternatives, provides services and resources to assist shelter residents in gaining independent housing, and partners with local agencies and non-profits to provide these services. DHS provides a wide variety of support services for the homeless including operating DHS-owned shelters and drop-in centers, coordinating management and logistics for private shelters, shelter building management and repair, transportation services for homeless and vulnerable populations, provisioning of food and supplies, and providing a uniformed police service responsible for safety and security inside DHS homeless shelters and for enforcing State and City laws on DHS property.

The homeless are housed in DHS shelters, private shelters run by local providers within the five boroughs, and in certain authorized and designated areas in former hotels, churches, community centers and apartment buildings. In cases of capacity shortage, DHS may arrange for some clients to stay in commercial hotel rooms. There are 78 organizations that operate private shelters within the five NYC boroughs, including Bowery Residents Committee / HomePlus, BronxWorks, Project Hospitality, and many others.

The homeless and homeless-vulnerable population in NYC consists of multiple groups with different needs and characteristics including single adults, adult families, victims of domestic violence, senior citizens, veterans, and families with children. In addition to basic shelter, homeless people have needs for a wide range of services and alternatives, including medical or psychiatric treatment, infant cribs or child accommodations. Some may have criminal histories or active restraining orders that may affect how they are accommodated.

The number of New York City homeless and those seeking temporary shelter has grown substantially over the past few years, creating significant challenges with respect to the task of ensuring that every person in need is assigned to an appropriate shelter on a nightly basis. DHS is now in a constant state of extremely tight shelter capacity, and is often looking for emergency expansions of capacity. The capacity constraints, along with the need to match clients to shelters that can address any special needs, makes it extremely important that DHS has an accurate and up to date understanding of shelter capacity and that we optimize the availability and use of existing units/beds.

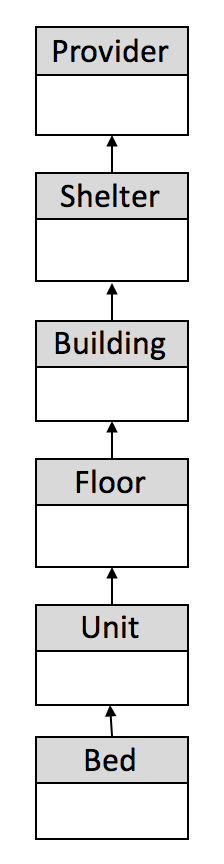
#### Office of Information Technology

The DHS Office of Information Technology (OIT) is responsible providing information technology to support the agency’s mission. DHS OIT operates a large centralized software suite and more than 100 smaller software applications providing services to 6,500 internal and external users across DHS and 15 other NYC agencies and more than 280 private and NYC-owned homeless shelters. Outside of DHS, the largest set of users of DHS applications are shelter operators. Other DHS Stakeholders include agencies such as DOITT, HRA, DOHMH, and the Mayor’s Office of Operations, community and private outreach organizations, as well as State and Federal authorities.

Since 2011, DHS OIT has supported the agency’s operations primarily via a large COTS-based product called CARES (based on IBM’s off-the-shelf Curam product) supplemented with a number of smaller MS Access-based applications, .NET applications and BI reports. CARES is a large J2EE/Oracle web-based application that was heavily modified to support the needs of NYC shelters and which has been in daily use by both internal DHS and external users since going live in late 2011. In 2015, a program was initiated to build a suite of new web and mobile applications in order to streamline operations, to retire obsolete platforms, to provide new functionality, to provide richer data sets and reporting to support decision-making, to improve ease of use and ease of access, and to better serve the needs of a diverse set of stakeholders.

#### Homeless Shelters

A shelter provider is any organization that operates one or more shelters. Although homeless clients may be temporarily housed in a commercial hotel room, commercial hotels are not considered shelter providers. A shelter is a group of one or more units (bed for single adult or room/apartment for families) that is directly operated by DHS or operated by a provider under contract with (or under the auspices of) DHS. A shelter building is a structure with at least one unit that is used to provide temporary overnight housing to the homeless. Although many shelters are comprised of single buildings, some shelters may comprise dozens of buildings across multiple city boroughs.

Shelter buildings include city-owned and operated buildings, buildings that are leased by the city, buildings that are leased or owned by private and for-profit shelter operators, and buildings that are leased or owned by private and non-profit shelter operators. In order to fully participate in the shelter program, an organization must be under contract with DHS—however, some providers currently provide services without being under contract. The process of becoming a contracted provider with DHS consumes significant time and resources from both DHS and the shelter operator, and the need to secure temporary housing for every client in need on a nightly basis trumps other concerns.

The relationship between providers, shelters, buildings, units, and beds is captured in the figure to the right and maintained in CARES. Not all layers of the hierarchy are equally relevant for all types of shelters. For example, Families with Children (FWC) are assigned to units rather than beds, and the capacity of those units is tracked. Surge capacity may be available (e.g. extra folding beds) to accommodate larger families. Only a single family is housed in a given unit. By contrast, single adult facilities are primarily concerned with tracking beds, and often all beds may be contained within a large open area. The following list describes the different types of shelters that are tracked in CARES:

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| Facility Type | Description |
| Adult Family Hotel | Rooms within converted hotels for adult families. As of today, there is only one commercial hotel in the adult family system. All others are buildings that were hotels at one point but are now used exclusively for shelter. |
| Adult Family Tier 2 | Tier two shelters for adult families meet physical and service requirements defined by the state, such as having a cooking space and a bathroom for each family. Tier two shelters are reimbursed at higher rates. |
| Adult Shelter | Shelters for single adults. This is a general designation that covers all building types for adults including purpose-built shelters, converted hotels, commercial hotels, and buildings repurposed for sheltering. |
| Family Cluster | A cluster facility generally comprises multiple apartment buildings where the homeless population may make up a minority of tenants. Social services are limited and the shelter does not qualify as a tier 2. |
| Family Hotel | Rooms for families with children primarily within former hotels repurposed for sheltering. Most family hotel units lack kitchens. |
| Family Tier 2 | Tier two shelters for families meet physical and service requirements defined by the state, such as having a cooking space and a bathroom for each family. Tier two shelters are reimbursed at higher rates. |
| Late Arrival | Overnight shelter for families with children that arrive after 5pm; they are placed in the shelter and then in the morning are bused back to the PATH intake center to finish up paperwork. |
| Safe Haven | A single adult facility that has a very low barrier to entry and which offers a low level of social services, designed to appeal to street homeless or others who may not accept, may not qualify for, or may be suspended or sanctioned from other types of shelters. |

There are currently more than 60,000 homeless people in shelters each night across the five boroughs. DHS currently tracks 291 shelters, of which 165 are Family with Children (FWC), 87 are adult, 26 are adult family, and 13 are safe haven. Of the FWC shelters, there are 89 tier IIs, 21 clusters, 53 hotels (a minority of which are commercial hotels), and 2 late arrivals.

#### Shelter Capacity Management

Shelter capacity management is concerned with forecasting, planning, and tracking availability and usage of beds and units within the facilities themselves. There are several important reasons to track bed usage and availability:

* If forecasted needs consistently overshoot actual needs, DHS may acquire capacity that is not used, increasing costs as compared to utilizing commercial hotels and other sources to fill temporary surges in demand.
* If actual capacity consistently falls short of forecasted needs, commercial hotels and other alternatives designed for minimal or short-term use must be used more heavily on a long-term basis.
* If repairs are not completed timely, units may remain offline for long periods of time, straining the system and impeding accurate forecasting; and
* Private shelters are paid based on counts of units of temporary shelter that are occupied annually—and shelters that maintain less than a 95% average utilization on an annual basis are reimbursed at (disproportionally) lower rates.

The goal of capacity management is to optimize cost versus benefits across all available shelter resources, including surge resources. Capacity management is an optimization problem that requires multiple inputs, including accurate and up to date information on shelter unit/bed availability, type, costs, and the availability of surge capacity, as well as accurate past, present, and projected future demographic information, weather forecasts, historical patterns and trends in shelter usage, and others. Historically, this type of forecasting has been done outside of CARES, because although the CARES system tracks active units and beds and their use, it is not intended to be a capacity forecasting system.

Projecting the number of people requiring shelter each day and matching it to projected capacity (i.e., units that are available, properly equipped and furnished) is a complex logistical task. Shelter units go offline whenever they are not ready to be occupied for a new client. This may be for the simple reason that a unit needs to be cleaned between two clients, basic maintenance, repair, or long-term renovation. There are a number of factors that have to be taken into consideration when projecting unit demand:

* Every homeless client or family in need must be housed every night without exception.
* The number of homeless to be housed on a given day fluctuates unpredictably due to a number of factors, including migration (in and out of NYC), recidivism (from permanent or transitional housing), and newly homeless.
* Adult shelters carry an active caseload that far exceeds the number of beds in a shelter, since the number of adults who show up on each night typically is only a fraction of the total; however, this number can vary significantly from night to night.
* Extra capacity must be reserved for cases where severe cold or hot weather may result in unexpected, urgent needs for extra beds due to “code blue” or “code red” situations, respectively.
* Units need to be cleaned and serviced in between uses, and in some cases, there may be repair or deep cleaning required.
* Regularly scheduled maintenance such as painting or pest extermination may take units offline.
* Units may be offline due to long-term renovation, or due to remediation efforts required to meet compliance requirements or to address code violations.
* Many shelter buildings are designated only for certain groups such as men, or women, or families with children, veterans, or mentally ill chemical abusers (MICA).
* Homeless with special needs, such as those requiring medication, psychiatric care, or with criminal records require special accommodation.

The process of aggregating the total number of units that are available and accessing the total number of units needed is projected in advance and then updated many times throughout each day. Units or commercial hotel rooms may be brought on-line with less than a day’s notice.

#### Shelter Intake and Placement

Once the intake process is complete clients are generally assigned to a specific shelter and will remain in that shelter until they “graduate” to permanent housing. Exceptions to this rule include late arrivals, safe havens, and urgent situations such as code red or code blue. New clients are processed at an appropriate intake center:

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| Population Type | Intake Center |
| Families with Children | Prevention Assistance and Temporary Housing (PATH), 151 East 151st street, Bronx |
| Adult Families | Adult Family Intake Center (AFIC) 400-430 East 30th street, Manhattan |
| Single Adult Men | 30th street Intake Center |
| Single Adult Women | HELP 1 Women’s Shelter, 116 Williams Avenue, Brooklyn  Franklin Shelter, 1122 Franklin Avenue, Bronx |

The process of intake and placement of clients differs significantly between adults and families with children, and therefore it is handled by two different units within DHS: IVC and HERO, respectively.

Family shelters are never overbooked. However, adult shelters will carry an active caseload that far exceeds the number of beds in a shelter, since most clients on active caseload will not be in shelter on any given night. However, on any given night a smaller or larger fraction of the number of clients could appear and ask for a bed. If the number of clients asking for a bed is below capacity, the shelter might get new clients. If more than capacity, the shelter will have to transfer out clients. The actual demand is often not clear until midnight on any given night, which makes it imperative that the process for projecting demand is as accurate as possible. The system for capturing roster information (actual usage) must support easy updates, error correction, undo, and reconciliation while maintaining a full audit trail of changes.

#### Intake and Vacancy Control (IVC)

The Intake and Vacancy Control (IVC) unit within DHS is responsible for placing single adults or adult families in shelters. IVC tracks lengths of stays in shelters, client movement from one shelter to another, and any entrants/exits from the shelter system using CARES. Single adult shelters can transfer clients within the shelter if needed, and they are responsible for updating CARES directly in that case. In order to determine which units are in use and which are available on a daily basis, adult shelters conduct a continual “roster” (census count) to track bed usage and availability. Roster information is typically captured manually each overnight at preset times: 10:30pm, 11:15pm, 12:15am, and 2:15am, and recorded in a database the following business day. The recording of clients within CARES is done independently of the roster update process, and the numbers must be reconciled by IVC. The roster information is currently maintained in an MS Access database. The IVC process covers public and private shelters, but does not track availability of “overflow” units in hotels or apartment buildings. Each Single Adult shelter is responsible for placing and exiting their own clients. Each unit is marked as vacant/available, reserved, out of service, or occupied. Reconciliation occurs only in the IVC world where excess demand may result in placement of clients into a shelter that has yet to be defined in CARES. In this case, IVC adds a new shelter which is marked as temporary until it gets reconciled with the new shelter entry in CARES.

#### Housing Emergency Referral Operation (HERO)

#### The Housing Emergency Referral Operation (HERO) unit within DHS is responsible for placing families with children in shelters. The HERO unit tracks lengths of stays in shelters, client movements from one shelter to another, and any entrants/exits from the shelter system using CARES. DHS HERO employees call shelters to update the roster (obtain census numbers) up to several times per day. The roster process marks each unit as vacant/available, reserved, out of service, or occupied. In addition to managing shelters for families with children, the mandate for HERO was ultimately expanded to include PCARD and offline unit tracking.

#### Procurement Cards (PCARD)

Procurement Cards or P-Cards are used by NYC agencies to make micro-purchases below a certain threshold (typically $5,000). They were established in order to streamline the process of procurement, invoicing, and payment, especially for small businesses and non-profits who are not able to bear the cost of lengthy payment or reimbursement cycles. Certain DHS employees are authorized to pay for provider invoices and for commercial hotel reservations by P-Cards. The Comptroller’s agreement to allow DHS to pay for commercial hotel rooms via P-Cards is extremely unusual within NYC agencies, and is a testament to the urgency of the DHS mission. Each P-Card is registered for a single DHS employee, the P-Card holder, and only that person is authorized to use the card. P-Card transactions are charged against the DHS Miscellaneous Expense Account (MEA) which is maintained separately from the general DHS invoicing system account. P-Cardsare typically used to pay for rooms needed on an emergency, per-diem basis in commercial hotels (by reserving blocks of rooms for a period of time). In addition, P-Cards may be used to pay for certain shelter expenses such as cleaning supplies or small repairs.

#### Offline Unit Tracking

The HERO unit tracks off-line FWC units to ensure that units and beds are returned to service timely. When a unit goes offline, information about the unit is captured including the date and time when it went offline, contact information, the reason (reserve, long-term renovation, under repair, other, and maintenance), and when it is expected or scheduled to return to service. Offline units are reviewed on a regular basis and their offline reason may be changed, for example from under repair to long-term renovation, as new information is entered. Since long-term renovations may be reimbursed by City or Federal funds, information about each facility must be captured and tracked to ensure eligibility and compliance. Private operators also receive reimbursement for regular shelter maintenance such as cleaning services and basic supplies. There is an approval workflow for repair and long-term renovation that includes review by DHS’s Maintenance, Repair, and Capital Construction (MRCC) and Capacity Planning and Development (CPD) units. In order to receive reimbursement for long-term renovations, work plans/costs must be approved in advance by the NYC Office of Management and Budget (OMB), monitored by DHS, and inspected on completion by the NYC Office of Temporary and Disability Assistance (OTDA). Although CARES tracks the number of units that are offline, it does not track the work being performed to bring units back online and the cost of that work.

#### Commercial Hotels Tracker

DHS has agreements with certain hotels across the five boroughs to reserve blocks of rooms for periods of time. CPD tracks the reservations and payment of the hotels. For families HERO tracks the usage of hotels. For adults, shelters determine which clients are placed into hotels.

### Shelter Capacity Dashboard

#### Value Proposition

The Shelter Capacity Dashboard is a new application being developed by DHS to provide a central source for viewing and reporting on aggregate availability and usage of shelter units, and projecting current and future needs. The application will provide the following benefits:

* Enable DHS to create more accurate forecasts of availability and use of existing units/beds over time, to enable plans that maximize benefits and minimize costs while fulfilling the DHS mission of providing appropriate shelter to every person in need;
* Provide the means to display, analyze, and apply trends of capacity and demand over broader time periods and especially year over year. This will enable the system to incorporate historical demands into the projections that are fully cognizant of well-known high and low demand periods (e.g. seasonal);
* Unify functionality previously provided by three separate applications into one: Intake/Vacancy Control (IVC), HERO Unit Demand and Projection, and the Commercial Hotels Tracking Spreadsheet;
* Provide graphical charts to track utilization, availability, and offline units by type over time to facilitate budgeting and management decision-making;
* Provide day by day tracking of the number of hotel rooms that are reserved (and thus paid for) which will support the charges on P-Cards and allow DHS to understand if it is appropriately using the hotel capacity obtained by the P-Card;
* Provide enhanced ease of use for tracking when and how changes were made, undoing and correcting erroneous information, and reconciling information with CARES, which will improve accuracy of information;
* Provide enhanced ease of use for managing rosters and for reconciling them with CARES, including when new “shelters” (such as a new commercial hotel) are added overnight;
* Provide the means to immediately record up-to-date information about off-line units such as changes in renovation status, offline reason, and other comments while maintaining the ability to reconcile any updates with CARES; and
* Provide the means to reconcile P-Card statements against authorizations and cost projections for renovations and repairs.

#### Out of Scope Items

The following items are currently not within the scope of Shelter Capacity Dashboard. It is possible that one or more of them might be part of a future development effort, after they have been properly analyzed, reviewed and approved.

* Improved business intelligence through integration with additional information such as NYC population census data, quarterly HOPE counts, and other information to improve the quality of forecasting and budgeting. (Note: it is possible some publically available data, such as NYC Open Data Census Population Projections or weather projections could be incorporated relatively easily)
* To provide an external web or mobile interface to facilitate the Roster update process for IVC and HERO.
* To reduce the need for manual reconciliation and double-entry of data by providing an automated interface that will facilitate CARES updates (such as the last-minute addition of a new shelter, discovered during overnight Roster updates), while providing for important approval and confirmation workflows to maintain high quality, accurate information.
* Improved visualizations by incorporating spatial information via google map integration, to plot offline units, plot unit usage and find correlations with other geo-spatial-oriented information.

## Application Functionality

### Dashboard

The Shelter Capacity Dashboard should be designed to provide important information to stakeholders at a glance, with the ability to drill down to details. Users should be able to quickly see the number of units offline, online, the number of reservations, the net number of units available, and projected availability for the day. The summary information should be filterable to apply to all homeless, or to group by facility type (public shelter, private shelter, commercial hotel, or other), or population type (families with children, single adults), or by borough or provider. The system should provide a master-detail type display to enable drilling down, and the detailed list should provide excel-like grouping, filtering, sorting, and exporting into formats such as Excel and PDF.

A split view, timeline view, and/or color-coded chart should be provided to enable the user to view demand over time, starting from actual demand in the past thru current demand and into projected demand in the future. In addition, offline units could be displayed by status in a heat map by provider or geo-spatially superimposed on a google map of the five boroughs.

### Roster Updates

Users should be able to add annotations or comments to indicate that aggregate numbers within a shelter building has been confirmed through the roster process. The user should be able to confirm or modify the status, for example to indicate that a unit noted as available is actually offline due to maintenance, repair, or long-term renovation, or that it has been reserved. The roster form should enable the user to record who provided the information and when they provided it.

### Offline Unit Tracking

The application should display a view of all offline units and the reasons they are offline. Alternative visualizations may also be useful to help users gather insights via trend analysis for how long units are offline, the number of units coming back online daily, reservations, surge, and total demand. The application should support a review and approval workflow for offline unit information to record whether updated data has been reviewed by MRCC/CPD. In addition, the application should indicate whether the system of record (CARES) has been updated. All information should be maintained indefinitely, so that all updates to a particular unit can be reviewed over time. Since audit trails may become quite lengthy, history listings should provide standard pagination, filter, sort, and grouping functionality.

### Demand and Projection

The user should be able to manage alternative what-if scenarios for aggregate projections and demand for units by day, for each population group (families with children, adults).

### Vacancy Transfer and Transportation

When the demand for units exceeds availability at a given adult shelter, one or more clients may be transferred to another shelter. Official transportation must be arranged from one shelter to the other. When this happens, the transfer information is entered into CARES. The CapDash application should display information for all transfers from one shelter to another. A user can add a new Transfer in CapDash. Transfers are taken into account when calculating availability and usage for the night.

### Commercial Hotel Usage

The system should provide day by day tracking of the number of hotel rooms that are reserved (and thus paid for) which will support the charges on a P-Card and allow DHS to understand if it is appropriately using the hotel capacity obtained by the P-Card.

### Program Maintenance and Reconciliation

Users can create new shelters in the system if needed during IVC Roster capture. The information captured for a new shelter will be scheduled or marked for incorporation into CARES, the system of record for programs and shelters. In some cases, the same information may have been updated in both CARES and CapDash, and/or the information may not match. The system should have an easy way of identifying and displaying any discrepancies, and of updating CapDash to match CARES. It is assumed that the process of applying updates to CARES to match changes made to CapDash will be a manual one: a CARES user will apply the relevant updates by hand using the CARES graphical user interface. Therefore, CapDash should provide reports, screens, and other facilities as to help make this manual process as easy as possible and reduce the possibility of errors and data integrity issues.

### Reports

The system should provide several predefined reports including:

### **Vacancy and Census Data by Date and Time**

This report enables users to see how many units were unavailable, used, and left vacant, by population type and by facility, over a given date range (from one day to one year). The report helps users determine whether facilities are being used effectively and whether units are kept online and returned to service timely.

### **IVC Daily Statistics**

This report shows aggregate numbers for units available, used, and left vacant for each population type and facility by day, over a group of days.

### **Vacancy Transfer and Transport information**

This report shows aggregate numbers for transferred and transported clients.

### **IVC Intake & Diversion Nightly Stats**

This report shows aggregate information regarding the intake dispensation for each shelter. It is designed to help measure the effectiveness of the logistics of assigning shelter beds. It should list the number of clients who left before being assigned a bed, the number diverted, and the number who overnighted. It should also track the number of clients pending assignment.

### System Integrations

**CARES**

CARES is the system of record for all public and private shelter information, including shelter metadata, offline unit information, and census audit trail data. CARES will remain the system of record for the vast majority of DHS data. Capacity Dashboard, along with the other applications under development source CARES data through a batch-oriented feed. Conversely, data that is updated in new applications but for which CARES is the system of record must also be updated in CARES.

There are several key pieces of data that are sourced from CARES including:

* public and private shelter information
* commercial hotels information
* Intake and vacancy control information

Currently the process for exporting information of interest from the CARES database simply provides the current values of all items within the complete data set, without providing an historical audit trail or providing incremental updates. This means that it is up to the applications to determine which data has changed. This data set may be exported up to multiple times per day. The CapDash application must record and display the time of the CARES update for each piece of data, so that the user can know the currency of the data they are looking at in the CapDash GUI.

Some of the data sourced from CARES can be updated directly in Shelter Capacity Dashboard. For example, a CapDash user may record a new shelter used to house clients in case of excess demand that has yet to be defined in CARES. A CapDash user may also update an out-of-use reason for an off-line unit directly in the CapDash GUI. The CapDash system must provide the means to detect discrepancies and updates from CARES, and to track and report on conflicting data changes so that they can be reconciled manually. The CapDash system should track which data are fully reconciled with CARES and which are not.

Since the synchronization process is not immediate nor continuous, the last reconciliation date should be tracked (this is n/a for new information), and any discrepancies or information that cannot be automatically reconciled for any reason must be flagged and a user should be notified so that the information can be manually reconciled. The system should facilitate manual reconciliation of data by highlighting discrepancies and providing an audit trail to help track down the root cause of the discrepancy and when it first occurred.

In the future, the design of systems such as CapDash could be simplified by creating a set of micro-services that would act as adapters, operating in between CARES and the new system. For example, a micro-service could maintain a copy of all shelter-related data originally sourced from CARES, and automatically detect when updates were made within CARES—broadcasting those changes to interested parties (such as BCS, CapDash, etc.). As new systems are brought on-line they too could subscribe to these updates as needed. In this way, the systems could highlight changes as they occurred without having to develop their own change detection or reconciliation logic. This micro-service could be fed by Change Data Capture (CDC) at the level of the CARES Oracle database, via a Curam ReSTful interface, and/or via custom business logic.

## Glossary

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| Term | Definition |
| Adult Family (AF) | At least two adults, no children |
| Acacia Network | Acacia Network manages 750 individual family units and four buildings for approximately 550 homeless adults. They operate programs such as the Adult Inpatient Detoxification, Residential/Outpatient Substance Abuse Treatment for Men, Women and Youth |
| AFIC | Adult Family Intake Center, located at 400-430 East 30th street, NYC |
| ASW | Assistant Social Worker |
| BEDCO | Bushwick Economic Development Corp; operates shelters in Flatbush area of Brooklyn |
| BCS | Building Compliance System: a DHS system that tracks code violations, inspection failures, and other deficiencies for buildings used for public and private shelters in NYC. |
| Capacity (versus Surge Capacity) | The total number of beds at a given homeless shelter. Some of the capacity may be offline at any given time. |
| CAP | Corrective Action Plan; established for shelters that fail an RSRI or an MTE. |
| CapDash | The Shelter Capacity Dashboard application |
| Case Type | Either Single Adult, Adult Family, Family with Children |
| Census Count | The number of occupied beds within a shelter (see Roster). |
| Client | A homeless person in need of shelter. There are multiple types of clients, including victims of domestic violence, families with children, single adults, adult families, and veterans. |
| CLOTH | Community League of the Heights; operates low-income housing in southern Washington Heights area |
| Cluster Site | An apartment in a private apartment building that is used to house homeless, as well as renting families. Social services are limited and the shelter does not qualify as a tier 2. A number of cluster sites were criticized for their high costs and bad condition, and as a result mayor DeBlasio is phasing out the program over the next three years. |
| CO | A Certificate of Occupancy is issued by the City for buildings that pass applicable inspections. Some shelter buildings unfortunately do not have a valid certificate of occupancy. |
| Code Blue | Code blue is declared when temperature falls below 32F or wind chill below 0F, ice storms or freezing rain or snow greater than 6 inches. During code-blue:   * drop-in centers are required to take as many clients as possible (within DOB restrictions), * Anyone in need can walk into a shelter without undergoing typical intake and eligibility procedures for the night, * single adults who have an assigned shelter can access any shelter, not just their assigned shelter, and * shelter suspensions or sanctions are lifted for the night. |
| Code Red | Code red is declared when a heat index of 90 degrees is predicted by the National Weather Service within 24 hours. During code-red:   * drop-in centers are required to take as many clients as possible (within DOB restrictions), * Anyone in need can walk into a shelter without undergoing typical intake and eligibility procedures for the night, * single adults who have an assigned shelter can access any shelter, not just their assigned shelter, and * shelter suspensions or sanctions are lifted for the night. |
| Comment | In CapDash 1.0, an update to the status of an offline unit is referred to as a “comment.” These audit trail records may be added manually or by the automated process that downloads fresh data from CARES into the CapDash database. For example, if an offline unit is no longer found in a CARES download, a “Unit.BackOnline” comment will be automatically added to the audit trail for the unit. |
| Commercial Hotel | A currently-operating hotel that for may agree to provide rooms at regular commercial rates for occasional emergency per-diem use for overflow clients. (not the same as Hotel Shelter) |
| Compartment ID | In CARES, information for all shelters, buildings, floors, units, and beds is contained in a single “Compartment” table, and each row is assigned a unique Compartment ID. Therefore, a compartment ID may uniquely identify a bed, a unit, a floor, a building, or a shelter. Compartment hierarchies are tracked by assigning a parent ID to a row in the Compartment table in the CARES database. For example, the table row for a bed compartment will include the ID of its parent “unit” or “floor” or “building” compartment. |
| Contractual Provider | An organization that operates homeless shelter via a contract with NYC. Contractual providers are paid via the Citywide Financial Management System. (see Non-Contractual Provider) |
| Covenant House | Emergency shelter program for youth and young mothers, and transitional living program for 18-21 year olds. |
| CPD | The DHS Capacity Planning and Development unit. The HERO unit reports into CPD. CPD reports directly to the DHS commissioner. |
| Demand (for unit) | Shorthand for “unfilled demand:” the number of people in a given building without a unit to stay in. |
| DHS RUN | “DHS\_RUN\_FACILITY” is a field within CARES that notes whether a shelter is operated by DHS directly versus a private provider. |
| Divert | When a homeless person is transferred to a shelter outside of the overnight shelter system. For example, some veterans are diverted to buildings that are not technically part of the overnight shelter system but are rather designed as transitional housing in order to fast-track them out of homelessness. |
| DOHMH | The New York City Department of Health and Mental Hygiene is the department of the NYC government that inspects dining establishments, licenses dogs, issues birth certificates for newborns, and operates low- or no-cost health clinics. DOHMH also performs epidemiological research on the patterns, causes, and effects of health and disease conditions in New York City neighborhoods. |
| DOITT | The New York City Department of Information Technology and Telecommunications (DoITT) is the department of the NYC governmentthat "oversees the City's use of existing and emerging technologies in government operations, and its delivery of services to the public. |
| Drop-in Center | The NYC Department of Homeless Services operates 5 Drop-in Centers throughout the city that are generally geared towards the chronically street homeless, or other hard-to-reach homeless populations. Drop-In centers provide hot meals, showers, laundry facilities, clothing, medical care, recreational space, employment referrals and other social services.  Drop-in Centers are not Shelters and therefore fall outside the scope of CapDash. |
| DV | Victim of domestic violence. Certain shelters that are dedicated for victims of domestic violence are maintained “off the grid” in secret locations. DV shelters are maintained and operated by HRA rather than DHS, and are therefore out of scope for CARES and CapDash. |
| Facility | A synonym for shelter building. Sometimes non-traditional buildings such as converted former hotels are used to house homeless. |
| Facility Code | A unique ID in CARES that identifies a shelter building. This may apply to a DHS shelter, a private shelter, or even a commercial hotel. |
| Facility Group | A synonym for facility type ***(Keith is this true?)*** |
| Facility Type | The type of facility, including: Adult family hotel, adult family tier 2, adult shelter, drop in, family cluster, family hotel, family tier 2, late arrival, safe haven |
| Family Cluster | A cluster facility generally comprises multiple apartment buildings where the homeless population may make up a minority of tenants. Social services are limited and the shelter does not qualify as a tier 2. |
| Fast Track | Transitional housing for homeless people transitioning into permanent housing. Some programs (such as veterans) divert homeless to fast track housing as needed. |
| FMD Assessment | Facility Maintenance and Development, a division within DHS reporting to the deputy commissioner of Administration. |
| FWC | Families with Children |
| HELP USA | A non-profit low-income housing and related services provider that operates in 38 locations across the United States. HELP operates transitional housing for families and a shelter intake center for adult women in Brooklyn. |
| HERO | The Homeless Emergency Referral Operation (HERO) is the DHS organizational unit within Capacity Planning & Development, led by the business owner of Cap Dash, that manages the placement of families with children into shelters. |
| Hotel Shelter | A building that was previously a hotel that was converted to shelter use. |
| HRA | The New York City Human Resources Administration / Department of Social Services is dedicated to fighting poverty and income inequality by providing New Yorkers in need with essential benefits such as food assistance and emergency rental assistance. HRA is one of the largest social services agency in the country. HRA operates a clandestine system of shelters for victims of domestic violence (DV). |
| ILP | Independent Living Plan: a plan completed by social workers or other case workers at shelters for homeless to facilitate transitioning to permanent housing; they are updated on a bi-weekly basis. |
| IVC | Intake and Vacancy Control (IVC) is the DHS unit that manages shelter placements of single adults. |
| LTR | Long-term renovation (LTR) is a designation for a shelter unit that is currently undergoing long-term renovation |
| MC | (column within the CaresUnitHistory table) ***Keith any ideas what this might refer to?*** |
| MEA | Miscellaneous Expense Account (MEA) is used for small purchases DHS employees make on behalf of DHS, for example using P-Cards. |
| MICA | Mentally ill chemical abusers |
| M&R / MRCC | Maintenance and Repair / Maintenance, Repair, and Capital Construction: a DHS unit that reports into the DHS Deputy Commissioner of Administration. |
| MTE | Monitoring Tool Evaluation: used to evaluate the condition of shelter buildings. MTEs are performed semi-annually on a minimum of 10% or 10 units, whichever is greater for each facility. MTEs are not graded but may result in a CAP. |
| Next Step Shelter | “Intensive case management” shelter intended for clients that need more attention to help them get into permanent housing. |
| Non-Contractual Provider | An organization that operates a homeless shelter but which does not have a contract with NYC. Non-contractual providers are paid by DHS via the DHS billing/invoicing system rather than the City’s Financial Management System (FMS). (see Contractual Provider). At present, all 48 hotels and several of the cluster sites and tier II sites operate without a contract on an emergency per-diem basis. The goal is to phase out non-contractual usages since they are not subject to enforceable contract terms such as maintenance and safety compliance. |
| OMB Approval | New York City Office of Management and Budget: The City government’s chief financial agency that assembles and oversees the both the expense (~$85B) and capital budget (~$14B) annually. OMB funds approximately 70 municipal agencies and more than 300K employees, including HRA and DHS. |
| OTDA Approval | New York City Office of Temporary and Disability Assistance; OTDA provides assistance to help low-income families from becoming homeless and the recently homeless to afford permanent housing. |
| PATH | Prevention Assistance and Temporary Housing (PATH) intake center for families with children, located at 151 East 151st street in the Bronx |
| Pending Assignment | A client who is at a shelter being processed or awaiting unit availability. |
| PCARD | Procurement Card: a credit card issued by NYC for procurements not to exceed $5k. Some of the P-Card holders who book hotel rooms as shelters have a waiver to spend up to $20k per transaction.  There is a separate app for P-Cards: <https://pcardstg.dhs.nycnet/> |
| Program | Programs are administrative offerings that are commissioned to track, manage, or assist specific populations of homeless or specific geographic areas; e.g. veterans. Programs may be specifically launched and funded by the City or may simply refer to different divisions within DHS. Examples of programs include: next step, medical, assessment, employment, general, outreach, mental health, reception, substance abuse, special population, MICA, veterans, annex, diversion, HRA housing, 55 and up, youth, criminal justice, female only |
| Projection | Shorthand for “nightly projection at a shelter”, the number of people who have come through the front door of a shelter, but are not registered yet. |
| Provider | An organization that operates one or more shelters within one of the five NYC boroughs. |
| Reconciliation | Reconciliation occurs only in the IVC world where excess demand may result in placement of clients into a shelter that has yet to be defined in CARES. Then IVC adds a new shelter which is marked as temporary until it gets reconciled with a new shelter input into CARES*.* |
| Reserved | When a homeless person is processed at shelter intake, they may be assigned a given shelter. When a client is assigned to a shelter, a bed is reserved for them. The number of reservations is tracked to ensure that all clients who are assigned to a given shelter always have a bed at that shelter each night. |
| Roster | The process of performing a census count to track the number of used versus open units/beds that a shelter will have. Within adult shelters, the roster is updated several times each night (10:30pm, 11:14pm, 12:314am, and 2:14am), since they often have an “open plan” with many beds in a large open area. The roster process for FWC is very different. For example, a shelter building may have a capacity of 88, a census of 80 and availability of 8. Shelters are remunerated based on final nightly census tallies averaged over a period of time. |
| RSRI | Routine Site Review Inspection. RSRI are conducted by the DHS Maintenance and Repair Unit (M&R) bi-annually. Failed RSRI result in a CAP. |
| Safe Haven | A low-threshold more private type of shelter with fewer rules and regulations, designed to accommodate the needs of the chronically street homeless who are not coming into traditional homeless shelters. The safe haven program was originally established under mayor Bloomberg in 2007. |
| Sanction | A homeless person who is sanctioned is forbidden to use their assigned shelter (due to violation of rules such as failing to seek employment or bad behavior). |
| Shelter | A group of one or more buildings each of which having at least one unit designated for temporary overnight accommodation for homeless, excluding transitional and permanent housing. DHS provides oversight for over 280 public and private shelters. |
| Single Adult (AD) | Single adult homeless client |
| SRO | Single Residence Occupancy, typically a unit that was formerly a hotel suite, having private bathrooms and some form of in-room cooking unit such as a stovetop range. |
| Surge | Temporary expansion of the number of beds at a shelter for emergency purposes. Surge beds may be cots that are folded and stored in a basement. |
| Surge Capacity | Extra capacity for unusual events, such as code blue. (see “Surge”) |
| Suspension | A homeless person may be suspended due to bad behavior or other reasons and unable to use their assigned shelter for a given period of time or until certain conditions are met. |
| Tier 2 Shelter | An apartment-style facility with a cooking space and a bathroom for each family. Tier II shelters may be an institutional shelter setting with private rooms offering three meals a day and/or cooking apparatus, as well as social services. |
| Transfer | Clients may be transferred from one homeless shelter to another, or even from one floor to another for various reasons including overcrowding, disturbances, or other issues. These transfers are recorded since they affect availability and invoicing for providers. Transportation is provided and may be reimbursed by DHS. |
| UAD | (column within CaresUnitHistory UAD\_Zip) ***Keith any idea what this might mean?*** |
| Under Repair | A room in a shelter is considered under repair for issues of regular maintenance such as small electrical or plumbing issues or maintenance/replacement of furniture. |
| Unit | A room within a shelter building, especially for a family. Most units have more than one bed, but those beds may not be individually tracked within CARES. |
| Unit Census | A process by which public and private shelters are contacted to determine an up-to-date tally of online and offline units, and the reasons why each offline unit is not available. |
| URI | Urban Resource Institute, a company in Brooklyn that operates domestic violence shelters including the “Urban Woman’s Shelter” (UWS) an emergency DV shelter located in Manhattan |
| Vacancy | A bed or unit that is not reserved, not occupied, and not offline. |

## Revision History

| **Version** | **Date** | **Author** | **Summary of Changes** |
| --- | --- | --- | --- |
| 0.1 | 12/30/2016 | Craeg Strong | Initial draft. |
| 0.2 | 01/28/2017 | Craeg Strong | Substantially revised and updated based on discussions with Barbara and Larisa, a review of the CapDash QA data schema, and a review of the CapDash 1.0 QA application |
| 0.3 | 01/31/2017 | Craeg Strong | Applied many updates and clarifications based on review by Barbara Gramann |
| 0.4 | 02/10/2017 | Craeg Strong | Applied many updates and clarifications based on review by Keith Peterson |

## Questions and Answers

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| --- | --- |
| Question | Comments and Answer |
| Does the city reimburse shelters directly for long-term renovations or improvements to buildings/units? How does DHS incentivize (beyond the 95% rule) shelter operators to improve the quality of their units? | *My understanding is that in order to receive reimbursement for long-term renovations, work plans must be approved in advance, monitored, and inspected on completion. Is that true?* |
| What is the process for performing projections of unit demand? | *Who does projections today? How many people are involved? Is it HERO & IVC, or some other unit? How often are they done? How far in advance are they done? What reports are used to facilitate projections? Who consumes this data?* |
| What types of expenses can be paid by P-Cards? Do providers need to sign up for this? Do they need vouchers or waivers? Who within DHS holds P-cards? Are they conceptually the same as the micro-purchase P-Cards used by other NYC agencies? Which billing account is used by the P-Cards? |  |
| What are the rules for reserved units? For how long can a unit be reserved? Who can reserve a unit? What is the difference between reserve, demand, and availability numbers in the CapDash report—it appears that “demand” is shorthand for “unfilled demand” Does “reserved” mean the units for people who have already been assigned to the given shelter? |  |
| When would a repair become so large that it becomes “long-term renovation” what is the dividing line? What are the rules for when a shelter provider can seek reimbursement for long-term renovations? What about in the case of code violations? |  |
| Is the per-transaction limit for P-cards $20K? Although each card can have its own limit, there must be an overall daily/weekly/monthly limit that no P-Card can exceed, what are those numbers? |  |
| What are some typical reasons that a Transfer occurs? Could it be overcrowding? A disturbance? Is the transportation reimbursed by DHS? By P-Card? If from one provider to another, who gets paid for the usage of the beds? Is the transfer reason recorded in CARES? Should it be recorded? Are there any pre-arrangements between shelters made so that everybody knows what to do if a transfer is needed? What vehicles are used? | *Many hotels have pre-existing arrangements established with other hotels to handle overflow, since they typically overbook knowing that a certain percentage of cancellations is likely. Do the shelters follow a similar practice?* |
| Are clients always expected to make their own way into shelters? Is transportation ever provided? If so, by whom? How is that tracked and paid for? |  |
| What does “pending assignment” mean? Presumably everyone gets a bed somewhere by the end of the night, so does “pending assignment” track the number of people who don’t immediately get a bed and have to be diverted or transferred? Why is this number tracked? |  |
| What is the roster process for FWC? How are the roster numbers reconciled with the usage numbers in CARES? Or do we just go with the numbers from CARES? |  |
| When exactly is OMB approval required? When is OTDA approval/inspection required? |  |
| What does the PCARD application do? <https://pcardstg.dhs.nycnet/>  Is there overlap in scope between that and CapDash? Does there need to be data integration? Workflow integration? |  |
| Is the Roster process and the unit census process the same process? Are they both done within both IVC and HERO? Is one more concerned with tracking the status of offline units and another with usage of beds during the overnight? |  |