

# Basic Automation Readjusting Budgets to Increase Efficiency (B.A.R.B.I.E.)

**Alaska Housing Finance Corporation**  
Management Innovation: Technology

**HFA Staff Contact**

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“Cause I’m just 10, anywhere else I’d be a 2

Is it destiny to live and die a life of budget fragility?”<sup>1</sup>

In case you missed the summer blockbuster, *Barbie*, this is a slightly edited lyric from the movie’s hit song “I’m Just Ken.” In his catchy lament, Ken sings about himself but, we at Alaska Housing Finance Corporation (AHFC), are referencing B.A.R.B.I.E.<sup>2</sup>, or *B*asic *A*utomation *R*eadjusting *B*udgets to *I*ncrease *E*fficiency. (Not a forced acronym at all.)

During the pandemic our team underwent a digital transformation starting with the development of a comprehensive portal for managing client data during rent relief. From there, the systems and processes evolved to address the needs of the Housing Stabilization and Recovery program in which Emergency Rental Assistance funds were utilized to help people escape homelessness. It was this program that gave rise to the idea of Dynamic Capacity Modeling, a method of budgeting that automatically calculates and adjusts the number of people a partner can assist based on their total award and their total obligations using this formula:

$$\phi = \frac{B - \sum_{i=1}^n (P_i \cdot X_i)}{\Gamma} + X_n$$

(Physicist Barbie approves.)

This is done in real-time, removing the need for partners to try and project their expected spend rates themselves. Much like *Weird Barbie*<sup>3</sup>, not only is Dynamic Capacity Modeling extraordinarily flexible, it is the catalyst to transform all our programs. But that wasn’t *Kenough*<sup>4</sup>. Further optimizing the technology, we also shifted from a contractor approach and instead looked inward (within our own agency that is) to our IT department. We leveraged technology, cross-department collaboration, and an iterative development approach to incorporate feedback from stakeholders to make changes and enhancements before going live. This process continues while the portal is active to improve user experience, data quality, and program management.

**Innovative**

Like most states, at the start of the pandemic, Alaska’s government and AHFC employed contractors to help build out a method to administer the Rent Relief funds. Alaska, through AHFC, unlike most other states, insisted on using tailored technologies to build something truly unique to Alaska’s need. This community specific mindset is the core of AHFC’s push to a more data-driven model for our programs. To this end, AHFC worked closely with our contractor to build a more bespoke portal system for the Housing Stabilization and Recovery program. However, this portal still needed to be integrated with the

1 Original lyric: “Cause I’m just Ken, anywhere else I’d be a ten  
Is it my destiny to live and die a life of blonde fragility?”

2 Somewhat ironically, Ryan Gosling, who played Ken, won an award for his role in *Barbie*. *Barbie* won nothing.

3 *Weird Barbie*, portrayed by Kate McKinnon, was played with too hard which made her extra flexible. She was also the catalyst for *Stereotypical Barbie* (Margot Robbie) to start her journey.

4 Another movie reference. You may have seen people wearing sweaters with “I am Kenough” on them.

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original Rent Relief system. Adding Dynamic Capacity Modeling proved to be a challenge and while the contractor was ultimately successful, what they built ended up being too specific and rigid to adequately manage and address our clients' dynamic situations and community needs.

Enter AHFC's own IT department. A major consideration for this system was its longevity and application to legacy programs. A component of that was ensuring our IT team could maintain and enhance the system in its current state. During the transition from contractor to AHFC management, our IT team discovered they could improve the system, simplifying it for the users while making it flexible enough to fit our other programs. AHFC decided to take that leap and work internally with IT to build a new system around Dynamic Capacity Modeling, which would be the first piece of a larger initiative to shift all our programs towards this model.

### The Unity Application

The Unity application, the name for the overall system built by AHFC's IT department, is structured around a layered architecture comprising four key components: Unity, Unity Core, Unity Types, and Airtable. The Unity front-end web application was developed in TypeScript using React, Redux Toolkit, and BaseWeb UI utilizing code specifically written to address feedback and direction from actual stakeholders, both inside and outside AHFC.

Unity Core functions as the service layer, housing the business logic and data access modules. Unity Types serves as the domain layer, defining the data model. It serves as a shared library between Unity and Unity Core, ensuring consistency and coherence in data representation.

Airtable acts as the persistence layer (data storage and retrieval), serving as both the database and providing a read-only view of the data to internal users. Together, these components form a robust and cohesive framework for managing and delivering program outcomes. From the user's view, it is an intuitive system that clearly identifies how many people any given provider has the capacity to help, while also providing details on past assistance.

The application's structure allows for customized front-end portals that feed directly into a standardized back-end. Going forward, this data flow will allow AHFC to have a holistic database of all programs, clients, and agency partners using the system. Not only will this give AHFC and our partners access to real-time data, but Dynamic Capacity Modeling will be underpinning all of it, maximizing efficiency and effectiveness.

Essentially, Dynamic Capacity Modeling is all the choreography and practice that went into the "I'm Just Ken" dance number while our partners are the audience getting to just enjoy the show.<sup>5</sup>

### Measurable Improvements in Agency Operations

Dynamic Capacity within the Unity portal ensures that programs can support new clients while maintaining fiscal responsibility. This feature allows for effectual allocation of resources and ensures that the program operates within its budgetary constraints. Essentially, by employing Dynamic Capacity modeling, the application keeps programs on budget while constantly adjusting to enable programs to help as many clients as possible. For partners, it greatly simplifies their burden by doing all the budget and expense calculations

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<sup>5</sup> If you haven't seen it, you should definitely watch the movie's big dance number. Then watch the live performance from the Oscars. It's worth it.

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for them. In the long term, this will cut back on administrative expenses, translating to larger spending budgets on the program side.

We as an agency will be able to see outcomes and program outcomes in real-time. AHFC will be able to identify issues or opportunities daily rather than having to wait for quarterly reports. We will be able to see what is working and where it is working which will then inform the direction of future funding. The detail of the data will be at our discretion, allowing more in-depth analysis to take place during or after programs are up and running.

### Benefits Outweighing Costs

Since the beginning of Rent Relief, AHFC worked closely with a single contractor, keeping costs extremely low. Throughout this process AHFC was able to meet frequently with the contractor and make changes and adjustments to the portal almost immediately. This continued into the next iteration of the portal for Housing Stabilization and Recovery, with regular meetings that included AHFC, the contractor, and the end-users. During this phase, AHFC developed and implemented Dynamic Capacity Modeling, allowing our partners to increase the number of clients they can serve without increasing the total budget they utilize.

With the Housing Stabilization and Recovery Program, AHFC awarded 25 partner agencies across the state funds to help nearly 3,000 households escape homelessness. Since the implementation of the new budgeting system utilizing Dynamic Capacity Modeling, our partners have already surpassed that number and still have capacity to help at least 670 additional households without increasing program expenses.

The success of the Housing Stabilization and Recovery Program, along with the unprecedented access to data it generates, pushed AHFC to adopt Dynamic Capacity Modeling and the portal system for our legacy programs. Here is where our IT team really stepped up. If we wanted to use this system long term, we did not want to rely on a contractor to run and optimize the portal. After much collaboration with IT and the contractor, IT was able to take over the daily maintenance and running of the existing systems. Beyond that, they began working on a more elegant and flexible system for long-term use across disparate programs.

The first version of our expanded homemade portal has already gone live. It is significantly improved from the iterations produced by the contractor; more intuitive, higher quality data, all in a simple, elegant format. Additionally, the back end has been standardized to be interchangeable for other programs with minor customizations on the front-end. Eventually, data from other programs will be able to feed into a single, uniform database giving AHFC a whole picture view of active programs in real-time with the ability to drill down to whatever level of granularity necessary.

### Conclusion

AHFC continues to refine and improve agency operations while moving toward a more data-driven, outcome-based approach to our programs. Switching to an in-house team and developing strong cross-departmental relationships, AHFC has full flexibility, opportunity to expand and innovate, and has improved the ability of our partners to help Alaskans. The development of this system and Dynamic Capacity Modeling has sparked statewide conversations with other agencies about data collection, sharing, and analysis. *B.A.R.B.I.E.* ensures that our partners will be more than *9*enough to address the needs within their respective communities.<sup>6</sup>

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<sup>6</sup> Last movie reference, now go enjoy the visual aids.



**Navigator Barbie**



Navigator Barbie has a budget of \$9,000.00. She can help three Kens with a budget of \$3,000.00 each.

**Beach Ken**



**Rival Ken**



**Merman Ken**



If the Kens only spend \$2,000.00 each, Navigator Barbie will be able to help additional clients!

**Alan**



**VOILA!!**

There is now enough budget to allow Alan into the program. All the math done behind the scenes!

# Barbie™

Basic Automation  
Readjusting Budgets  
to Increase Efficiency

WELCOME, NAVIGATOR BARBIE.

USERNAME: NAVIGATOR.BARBIE@AHFC.US

ROLE: NAVIGATOR

**ALASKA HOUSING FINANCE CORPORATION**

ANCHORAGE, AK

TOTAL AWARD \$50,000.00

TOTAL OBLIGATED FUNDS \$47,200.00

FUNDS REMAINING \$2,800.00

**NAVIGATORS**

0

SLOT(S) AVAILABLE  
AT THE CURRENT STANDARD  
ALLOCATION OF  
\$3,000.00

**CLIENTS**

**MERMAN KEN**

RE-4308763379

\$3000 ACTIVE

**BEACH KEN**

RE-6527158591

\$3000 ACTIVE

**RIVAL KEN**

RE-3162177892

\$3000 ACTIVE

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ROLE: NAVIGATOR

**ALASKA HOUSING FINANCE CORPORATION**

ANCHORAGE, AK

TOTAL AWARD \$50,000.00

TOTAL OBLIGATED FUNDS \$44,200.00

FUNDS REMAINING \$5,800.00

**NAVIGATORS**

1

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**RIVAL KEN**

RE-3162177892

\$2000 ACTIVE

If the Kens only spend \$2,000.00 each, Navigator Barbie will be able to help additional clients!

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USERNAME: NAVIGATOR.BARBIE@AHFC.US  
ROLE: NAVIGATOR

**ALASKA HOUSING FINANCE CORPORATION**  
ANCHORAGE, AK

TOTAL AWARD	\$50,000.00
TOTAL OBLIGATED FUNDS	\$47,200.00
FUNDS REMAINING	\$2,800.00

**NAVIGATORS**

TEST CORE BCASH@RESDAT.COM
DONALD GOTCHAL DGOTCHAL@AHFC.US

**0**  
SLOT(S) AVAILABLE  
AT THE CURRENT STANDARD  
ALLOCATION OF  
**\$3,000.00**

## CLIENTS

SHOW BOTH ACT

**MERMAN KEN**  
RE-4308763379  
\$2000 ACTIVE

**ALAN ALAN**  
RE-2226692474  
\$3000 ACTIVE

**BEACH KEN**  
RE-6527158591  
\$2000 ACTIVE

**RIVAL KEN**  
RE-3162177892  
\$2000 ACTIVE

**VOILA!!**  
*There is now enough budget to allow Alan into the program. All the math done behind the scenes!*

**UNITY**

All data sources consolidated under the Unity Portal umbrella

**Alaska Housing**  
FINANCE CORPORATION



Rent Relief Data



Housing Stabilization Data



Other Program Data