Energy Billing System (EBS) Modernization Project

Project Code: EBS-2025
Last Updated: October 3, 2025
Project Status: 🟡 Yellow (On Track with Minor Risks)

Project Overview

The Energy Billing System (EBS) Modernization Project represents a transformative initiative to replace our 25-year-old mainframe-based billing infrastructure with a modern, cloud-native, microservices-based platform. This critical business transformation will fundamentally improve our operational efficiency, customer experience, and competitive positioning in the rapidly evolving energy marketplace.

Business Drivers

Our current legacy mainframe system, BillCalc v3.1, processes approximately 2.3 million customer billing cycles monthly but suffers from multiple critical limitations:

- **Technical Debt Accumulation:** The COBOL-based codebase contains over 450,000 lines of code with minimal documentation, making even simple changes require 6-8 week development cycles
- **Operational Cost Burden:** Annual mainframe licensing and maintenance costs exceed $1.2M, with an additional $800K in specialized contractor fees for system support
- **Processing Error Rate:** Current system generates billing errors at a rate of 0.8% (approximately 18,400 erroneous bills monthly), resulting in significant customer service overhead and regulatory compliance concerns
- **Market Agility Limitations:** Inability to support modern rate structures including time-of-use pricing, demand response programs, renewable energy credits, and dynamic pricing models that competitors are rapidly deploying
- **Customer Experience Deficiencies:** No self-service capabilities, limited payment options, and 48-72 hour billing cycle delays

Project Goals

Primary Objective: Implement a scalable, cloud-native billing platform that reduces operational costs by 30%, decreases billing error rates to <0.1%, and enables rapid deployment of new rate products within weeks instead of months.

Specific Success Criteria:

1. **Cost Reduction:** Achieve $650K annual operational savings through cloud infrastructure optimization and reduced manual intervention
2. **Error Rate Improvement:** Reduce billing calculation errors from 0.8% to less than 0.1% through automated validation and business rule engines
3. **Processing Performance:** Process complete billing cycles for 2.3M customers in under 8 hours (current: 18-22 hours)
4. **Rate Plan Flexibility:** Enable business users to configure and deploy new rate structures without engineering support
5. **Customer Self-Service:** Launch customer portal with 80% adoption rate for online bill viewing and payment within 6 months post-launch
6. **Regulatory Compliance:** Achieve full audit trail capability with immutable billing calculation logs for regulatory compliance
7. **Integration Capability:** Establish robust API integrations with CRM (Salesforce), payment gateways (Stripe, PayPal), and smart meter infrastructure

Strategic Alignment

This project directly supports our corporate strategic pillars:

- **Digital Transformation Initiative:** Modernizes core business operations with cloud-first architecture
- **Customer Experience Excellence:** Enables self-service capabilities and flexible billing options
- **Operational Excellence:** Reduces manual processes and operational overhead
- **Competitive Differentiation:** Enables innovative rate products and services that competitors cannot quickly match

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Quick Links

Core Project Resources

- **Project Roadmap & Timeline** - Detailed phase breakdown with milestones
- **Jira Project Board** - Active sprint work and backlog
- **Technical Architecture** - System design and data models
- **API Documentation** - Complete API reference with examples
- **Team Contact Directory** - Roles, responsibilities, and contact information

Operational Dashboards

- **Production Monitoring Dashboard** - Real-time system health metrics
- **Build & Deployment Pipeline** - CI/CD status and deployment history
- **Test Coverage Reports** - Code quality and test metrics

Documentation Library

- **Functional Specifications** - Detailed business requirements
- **User Stories & Acceptance Criteria** - Product backlog documentation
- **Compliance & Security Requirements** - Regulatory and security standards
- **Runbooks & Operational Procedures** - Support and troubleshooting guides

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Project Organization

Core Team Structure

Executive Sponsorship

- **Executive Sponsor:** Jennifer Morrison, VP of Finance & Operations
- **Project Sponsor:** David Chen, Director of IT Operations
- **Budget Authority:** CFO Office

Project Leadership

- **Program Manager:** Sarah Williams - Overall project coordination, stakeholder management, and delivery accountability
- **Product Owner:** Marcus Rodriguez - Business requirements, prioritization, and acceptance criteria
- **Scrum Master:** Amanda Chen - Agile facilitation, impediment removal, and team velocity optimization

Technical Leadership

- **Principal Architect:** Dr. Robert Kumar - Solution architecture, technology selection, and technical governance
- **Tech Lead - Backend Services:** James Patterson - Microservices development, API design, and integration architecture
- **Tech Lead - Data Engineering:** Lisa Thompson - ETL pipelines, data migration, and analytics infrastructure
- **Tech Lead - Frontend:** Kevin Park - Customer portal and admin interface development

Quality & Operations

- **QA Lead:** Michelle Anderson - Test strategy, automation, and UAT coordination
- **DevOps Lead:** Carlos Martinez - Infrastructure, CI/CD, monitoring, and production support
- **Security Lead:** Priya Sharma - Security architecture, vulnerability management, and compliance

Business Stakeholders

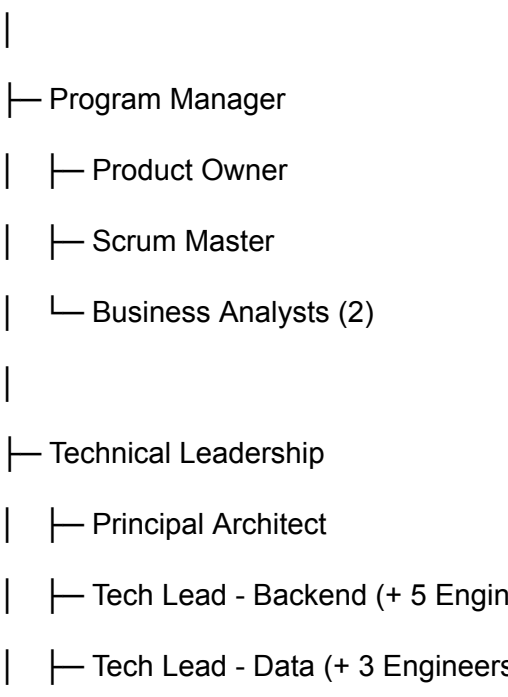
- **Finance Representative:** Tom Richardson - Billing accuracy, revenue recognition, and financial reporting
- **Customer Support Manager:** Rachel Foster - Customer impact, support procedures, and training
- **Regulatory Compliance Officer:** Emily Watson - Regulatory requirements and audit readiness

Extended Team:

- Development Team: 8 Full-Stack Engineers
- QA Engineers: 4 (2 Automation, 2 Manual Testing)
- Data Analysts: 3
- UX Designer: 1
- Technical Writers: 2

Organizational Chart

Executive Sponsor (VP Finance)



│ └─ Tech Lead - Frontend (+ 3 Engineers)

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└─ Quality & Operations

├─ QA Lead (+ 4 QA Engineers)

├─ DevOps Lead (+ 2 DevOps Engineers)

└─ Security Lead (+ 1 Security Engineer)

Current Sprint Information

Sprint 14 (October 1-14, 2025)

Sprint Goal: Complete integration testing for Rating Service with legacy account database and finalize data migration ETL scripts for Customer and Service Address entities.

Key Deliverables:

1. Integration between Rating Service and legacy CustomerDB (EBS-156)
2. Complete ETL validation for 50,000 test customer records (EBS-E2)
3. Implement Late Fee calculation logic for dunning process (EBS-76)
4. Deploy Invoice Generation Service to staging environment (EBS-189)

Sprint Capacity: 85 Story Points
Committed Points: 82 Story Points
Current Velocity: Team averaging 78 points over last 3 sprints

Sprint Health Indicators:

- Stories Completed: 12/18
- Stories In Progress: 6/18
- Blocked Stories: 0
- Sprint Burndown: On track (52 points remaining with 7 days left)

Key Risks This Sprint:

- 🟡 Legacy database credentials delayed - may impact integration testing timeline
- 🟢 All other dependencies on track

Project Timeline & Milestones

Project Duration: January 2025 - September 2026 (21 months)
Current Phase: Phase 3 - Integration & Testing (Month 9 of 21)

Major Milestones Achieved

✅ **M1 - Project Kickoff & Discovery** (January 2025)
✅ **M2 - Technical Architecture Approved** (February 2025)
✅ **M3 - Development Environment Established** (March 2025)
✅ **M4 - Core Microservices MVP Complete** (May 2025)
✅ **M5 - Meter Ingestion Service Production-Ready** (July 2025)
✅ **M6 - Rating Service R1 Rate Plan Complete** (August 2025)

Upcoming Milestones

🎯 **M7 - Data Migration Phase 1 Complete** (November 2025)
🎯 **M8 - UAT Phase 1 Sign-off** (December 2025)
🎯 **M9 - Parallel Billing Testing Begins** (January 2026)
🎯 **M10 - Production Cutover** (April 2026)
🎯 **M11 - Legacy System Decommissioning** (June 2026)
🎯 **M12 - Customer Portal Launch** (September 2026)

Key Decisions Log

This section tracks all major architectural, technical, and business decisions made throughout the project lifecycle. Each decision includes context, alternatives considered, and rationale.

[View Complete Decisions Log →]

Recent Decisions (Last 30 Days)

D-047: Database Technology Selection for Rating Service
Date: September 15, 2025
Decision: PostgreSQL 15 with TimescaleDB extension for time-series usage data
Alternatives Considered: MongoDB, AWS DynamoDB, Oracle
Rationale: PostgreSQL provides ACID compliance required for financial transactions, excellent JSON support for flexible rate definitions, and TimescaleDB enables efficient time-series queries for historical usage analysis. Cost-effective compared to Oracle, better relational modeling than

NoSQL alternatives.
Impact: High - affects core billing calculation performance and data integrity

D-048: Payment Gateway Integration Strategy
Date: September 22, 2025
Decision: Multi-gateway approach with Stripe as primary, PayPal as secondary
Alternatives Considered: Single gateway (Stripe only), proprietary ACH integration
Rationale: Reduces vendor lock-in, provides payment method redundancy, and aligns with customer preference data showing 65% prefer card payments (Stripe) and 28% prefer PayPal
Impact: Medium - increases integration complexity but improves reliability

D-049: Rate Plan Configuration Approach
Date: September 28, 2025
Decision: JSON-based rate definition with business rule engine (Drools)
Alternatives Considered: Hard-coded rate logic, custom DSL, database-driven configuration
Rationale: Enables business users to define rate structures without code deployment, supports complex rate logic including time-of-use and demand response, provides audit trail of rate changes
Impact: High - fundamental to business agility goals

Risk Register Summary

[View Complete Risk Register →]

High Priority Risks (Severity: High)

R3: Incomplete Historical Data Migration
Status: 🔴 RED - Under Active Mitigation
Probability: High (70%)
Impact: High - Could delay production cutover by 4-6 weeks
Description: Legacy mainframe data quality issues discovered during initial ETL development. Approximately 15% of Service Address records contain incomplete or inconsistent data requiring manual remediation.
Mitigation Plan:

- Focus Phase 1 migration on active customers only (95% of volume)
- Create separate data remediation team (2 analysts, 4-week engagement)
- Implement automated data quality validation rules
- Establish "quarantine database" for problematic records requiring manual review
  Owner: Lisa Thompson (Data Tech Lead)
  Next Review: October 10, 2025

Medium Priority Risks

R7: Smart Meter API Rate Limiting
Status: 🟡 YELLOW - Monitoring
Probability: Medium (40%)
Impact: Medium - Could affect meter data ingestion performance
Mitigation: Implement exponential backoff retry logic and request throttling

R12: UAT Resource Availability
Status: 🟡 YELLOW - Monitoring
Probability: Medium (50%)
Impact: Medium - May extend UAT timeline by 1-2 weeks
Mitigation: Secured commitment from Finance team leadership for dedicated UAT participation

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Success Metrics & KPIs

Development Progress Metrics

- **Epic Completion:** 6/12 Epics Complete (50%)
- **Story Points Delivered:** 847/1680 Total Points (50.4%)
- **Sprint Velocity (Average):** 78 points per 2-week sprint
- **Code Coverage:** 87% (Target: >85%)
- **Technical Debt Ratio:** 3.2% (Target: <5%)

Quality Metrics

- **Defect Density:** 1.2 defects per 1000 lines of code (Target: <2.0)
- **Critical Bugs Open:** 2 (Target: <5)
- **Test Automation Coverage:** 76% (Target: >70%)
- **Production Incidents (Post-Staging Deploy):** 0 (Target: <3 per release)

Business Outcome Metrics (Projected)

- **Projected Cost Reduction:** $685K annually (Target: $650K)
- **Projected Error Rate:** 0.08% (Target: <0.1%)
- **Processing Time Improvement:** 8.2 hours vs. 20 hours current (59% improvement)
- **Time-to-Market for New Rates:** 2-3 weeks vs. 8-12 weeks current

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Communication Plan

Regular Meetings

Daily Standup

- **Time:** 9:00 AM IDT, Monday-Friday
- **Duration:** 15 minutes
- **Attendees:** Development Team, Tech Leads, Scrum Master
- **Format:** What I did yesterday, what I'm doing today, any blockers

Sprint Planning

- **Frequency:** Every 2 weeks (Wednesday)
- **Duration:** 3 hours
- **Attendees:** Full team + Product Owner
- **Agenda:** Review backlog, estimate stories, commit to sprint goal

Sprint Review/Demo

- **Frequency:** Every 2 weeks (Tuesday)
- **Duration:** 1 hour
- **Attendees:** Full team + Stakeholders
- **Purpose:** Demonstrate completed work, gather feedback

Retrospective

- **Frequency:** Every 2 weeks (Tuesday, after Review)
- **Duration:** 1 hour
- **Attendees:** Core team only
- **Purpose:** Continuous improvement discussion

Stakeholder Status Meeting

- **Frequency:** Weekly (Thursday 2:00 PM IDT)
- **Duration:** 30 minutes
- **Attendees:** Program Manager, Product Owner, Tech Leads, Key Stakeholders
- **Format:** Status update, risk review, decision items

Architecture Review Board

- **Frequency:** Bi-weekly (alternating Wednesdays)
- **Duration:** 2 hours
- **Purpose:** Review technical design decisions, ensure architectural consistency

Communication Channels

- **Slack #proj-ebs-dev:** Technical discussions, deployment notifications

- **Slack #proj-ebs-status:** Status updates, alerts, announcements
- **Email:** Formal communications, executive updates, external stakeholder communications
- **Confluence:** All documentation, specifications, meeting notes
- **Jira:** Work tracking, bug reports, sprint planning

Related Pages

Technical Documentation

- System Architecture Overview
- Microservices Design Patterns
- API Integration Guide
- Database Schema Documentation
- Security Architecture

Business Documentation

- Functional Requirements
- Rate Plan Specifications
- Customer Portal Requirements
- Compliance Requirements

Operational Documentation

- Deployment Procedures
- Runbook Library
- Monitoring & Alerting Guide
- Incident Response Plan

Page Maintainer: Sarah Williams (Program Manager)
Last Review Date: October 3, 2025
Next Scheduled Review: October 17, 2025