**Parkside Bakery - Complete Operational Model**

**EXECUTIVE SUMMARY**

Parkside Bakery is a 4-person artisan bread bakery located in a suburban commercial district, established in March 2023 (2.5 years in operation as of October 2025). The bakery operates a hybrid business model combining direct retail sales (70% of revenue) with selective wholesale accounts (30% of revenue). The operation is housed in a 1,500 square foot commercial space and produces approximately 180-220 loaves daily across 10 core products, along with a rotating selection of focaccia and seasonal items.

**1. BUSINESS PROFILE**

**1.1 Location and Context**

**Address:** 847 Parkside Avenue, Mapleton Heights  
**Location Type:** Suburban commercial corridor with mixed residential and small business surroundings  
**Neighborhood Demographics:**

* Population density: ~4,200 people per square mile
* Median household income: $72,000
* Primary customer profile: Families, health-conscious professionals, food enthusiasts aged 30-55
* Foot traffic: Moderate during weekday mornings (7-9 AM), high on weekend mornings (8 AM-12 PM)

**Proximity Advantages:**

* 3 blocks from commuter rail station (morning foot traffic)
* Adjacent to organic grocery co-op (complementary customer base)
* 0.8 miles from farmers market location (Saturday presence)
* Residential neighborhoods within 1-mile walking radius

**Operating Hours:**

* Tuesday-Friday: 7:00 AM - 6:00 PM
* Saturday: 7:00 AM - 4:00 PM
* Sunday: 8:00 AM - 2:00 PM
* Monday: CLOSED (deep cleaning, maintenance, admin day)

**1.2 Ownership and History**

**Owner/Operator:** Marcus Chen, 38 years old

**Background:**

* 15 years professional baking experience
* Previously: Production baker at acclaimed urban bakery (5 years), then head baker at farm-to-table restaurant (4 years)
* Formal training: Culinary Institute certificate in Artisan Bread & Viennoiserie (2009)
* Philosophy: Commitment to "real bread" principles - minimal ingredients, long fermentation, daily production
* Personal motivation: Desire to serve local community with accessible, high-quality bread while maintaining work-life balance

**Startup Timeline:**

* Planning phase: September 2022 - January 2023
* Build-out and equipment installation: January - February 2023
* Soft opening: March 1, 2023
* Full operations: April 2023

**Evolution:**

* Year 1 (2023): Established core product line, built customer base, operated with 3 staff (Marcus + 2)
* Year 2 (2024): Added 4th team member to increase capacity, expanded wholesale accounts, refined production schedule
* Current (2025): Mature operations with consistent production, exploring online ordering system

**1.3 Core Product Line**

**Daily Bread Program (8 core breads):**

1. **Classic Country Sourdough** (Signature item)
   * 900g oval bâtard
   * 75% hydration, 20% levain
   * Blend of 85% bread flour, 15% whole wheat
   * Production: 50 loaves/day (Tuesday-Friday), 75/day (weekend)
2. **Whole Grain Sourdough**
   * 900g round boule
   * 78% hydration, 22% levain
   * 60% bread flour, 30% whole wheat, 10% rye
   * Production: 25 loaves/day (Tuesday-Friday), 35/day (weekend)
3. **Seeded Multigrain**
   * 850g oval
   * 73% hydration, 20% levain, 15% seed mix (sunflower, flax, sesame)
   * 75% bread flour, 25% whole wheat
   * Production: 20 loaves/day (Tuesday-Friday), 30/day (weekend)
4. **Classic Baguette** (using poolish)
   * 300g traditional shape
   * 72% hydration, 40% poolish (of total flour)
   * 100% bread flour
   * Production: 40 baguettes/day (all days)
5. **Rustic Ciabatta** (using biga)
   * 600g slipper shape
   * 85% hydration, 30% biga
   * 100% high-protein bread flour
   * Production: 15 loaves/day (Tuesday-Saturday), 20/day (Sunday)
6. **Whole Wheat Sandwich Loaf**
   * 850g pan loaf
   * 70% hydration, 1.1% commercial yeast
   * 50% whole wheat, 50% bread flour, enriched with butter and honey
   * Production: 20 loaves/day (Tuesday-Friday), 30/day (weekend)
7. **Olive & Rosemary Sourdough**
   * 900g round
   * 75% hydration, 20% levain, 12% olives, fresh rosemary
   * 90% bread flour, 10% whole wheat
   * Production: 15 loaves/day (Wednesday, Friday, Saturday)
8. **Rye Sourdough (40%)**
   * 900g round
   * 80% hydration, 25% levain
   * 60% bread flour, 40% rye flour
   * Production: 12 loaves/day (Thursday, Saturday)

**Rotating Items (2 rotating focuses):**

1. **Rosemary Focaccia**
   * 1200g sheet (cut into 6 portions)
   * 85% hydration, cold-fermented
   * Tuesday, Thursday, Saturday production: 4 sheets/day
2. **Seasonal Sweet Focaccia**
   * 1200g sheet (cut into 6 portions)
   * 85% hydration, seasonal toppings (e.g., grape & thyme in fall, fig & honey in late summer)
   * Wednesday, Friday, Sunday production: 3 sheets/day

**Production Philosophy:**

* All bread uses natural leavening (sourdough) except sandwich loaf and baguettes
* No dough conditioners, improvers, or preservatives
* Cold retardation used strategically for all naturally leavened breads
* Same-day production for baguettes and enriched items
* Organic flour blend: 60% organic, 40% conventional (cost management)

**2. FACILITIES AND EQUIPMENT**

**2.1 Space Layout and Dimensions**

**Total Space:** 1,500 square feet commercial rental unit

**Layout Breakdown:**

**Back of House (BOH) - 1,050 sq ft (70%)**

1. **Production Zone - 620 sq ft**
   * Primary mixing area: 120 sq ft (12' x 10')
   * Main shaping benches: 180 sq ft (18' x 10')
   * Oven area: 160 sq ft (16' x 10') - includes clearances
   * Bulk fermentation/holding area: 100 sq ft (10' x 10')
   * Cooling rack zone: 60 sq ft (8' x 7.5')
2. **Cold Storage - 180 sq ft**
   * Walk-in cooler: 48 sq ft (6' x 8' interior)
   * Reach-in refrigerators: 24 sq ft footprint
   * Proofing retarder: 18 sq ft footprint
   * Access/circulation: 90 sq ft
3. **Dry Storage & Receiving - 150 sq ft**
   * Ingredient storage (flour, etc.): 80 sq ft
   * Packaging materials: 30 sq ft
   * Receiving area/dolly storage: 40 sq ft
4. **Sanitation & Employee - 100 sq ft**
   * 3-compartment sink: 30 sq ft
   * Handwashing stations (2): 12 sq ft
   * Employee changing area: 24 sq ft
   * Mop sink/cleaning supplies: 18 sq ft
   * Small office desk: 16 sq ft

**Front of House (FOH) - 450 sq ft (30%)**

1. **Customer Service Area - 280 sq ft**
   * Display case zone: 80 sq ft (10' x 8')
   * Point-of-sale counter: 32 sq ft (8' x 4')
   * Customer queuing/circulation: 120 sq ft
   * Small seating (4 stools at counter): 48 sq ft
2. **Packaging/Holding - 100 sq ft**
   * Final product holding shelves: 40 sq ft
   * Packaging station: 36 sq ft
   * Wholesale order staging: 24 sq ft
3. **Restroom (customer accessible) - 70 sq ft**

**Utility/Mechanical:**

* HVAC, water heater, electrical panels: Ceiling-mounted or wall-integrated
* Ventilation hood over oven: 6' x 4' footprint (included in oven area measurement)

**2.2 Equipment Inventory - Complete Specifications**

**PRODUCTION EQUIPMENT**

**1. SPIRAL MIXER**

* **Make/Model:** American Eagle AE-4030 (40-quart)
* **Capacity:**
  + Maximum flour: 26 lbs (11.8 kg)
  + Maximum dough: 44 lbs (20 kg)
  + Practical batch size: 15-18 kg dough (68% of max)
* **Bowl:** Stainless steel, removable
* **Power:**
  + Motor: 1.5 HP agitator, 0.5 HP bowl
  + Electrical: 220V, 3-phase, 11.5 amps
  + Power consumption: ~2.8 kW during operation
* **Speeds:**
  + Low speed: 120 RPM (incorporation)
  + High speed: 240 RPM (development)
* **Features:**
  + Dual motors (independent agitator and bowl rotation)
  + Reversible bowl action in low speed
  + Digital 60-minute timer with auto-shutoff
  + Emergency stop button
  + Bowl guard safety interlock
* **Dimensions:** 31"W x 42"D x 52"H
* **Weight:** 485 lbs
* **Purchase:** Used, 2023, $7,200
* **Cycle Time:**
  + Average mix cycle: 12-15 minutes
  + Load/unload time: 3-5 minutes
  + Maximum throughput: 3-4 batches/hour
* **Maintenance:** Weekly belt tension check, monthly gear lubrication, daily cleaning

**2. DECK OVEN**

* **Make/Model:** LBC Bakery Equipment SE-932 (3-Deck Electric Modular)
* **Capacity:**
  + Deck configuration: 3 decks, each 3 full-size (18"x26") sheet pans
  + Practical bread capacity per deck: 8-10 loaves depending on size
  + Total oven capacity: 24-30 loaves per full load
* **Power:**
  + Electrical: 208V, 3-phase, 72 amps
  + Power consumption per deck: ~11 kW
  + Total connected load: 33 kW
  + Actual operating consumption: 22-28 kW (varies by number of decks in use)
* **Temperature:**
  + Range: 200°F - 550°F (93°C - 288°C)
  + Recovery time: 8-12 minutes between bakes
  + Preheat time: 60-75 minutes to 500°F
* **Features:**
  + Independent temperature control for each deck
  + Built-in steam injection system (3 second burst, 8 second sustained options)
  + 2" thick ceramic stone hearths
  + Interior lighting
  + Adjustable steam dampers (venting control)
  + Digital temperature display and timers for each deck
* **Deck Heights:** 8 inches interior clearance
* **Dimensions:** 72"W x 42"D x 78"H (stacked)
* **Weight:** 1,850 lbs
* **Purchase:** New, 2023, $17,738
* **Installation:** Required 3-phase electrical upgrade, hood system integration - additional $4,200
* **Cycle Time:**
  + Baguette bake: 22-25 minutes
  + Standard sourdough: 35-40 minutes
  + Dense rye: 45-50 minutes
  + Sandwich loaf: 35-38 minutes at lower temp
* **Energy Cost:** ~$180/month at local commercial electric rates ($0.12/kWh, 22 hours use/week average)
* **Maintenance:** Daily deck cleaning, monthly door gasket inspection, quarterly service call ($180/visit)

**3. PROOFING RETARDER**

* **Make/Model:** Avantco HPI-1836 (Full-Height Insulated)
* **Capacity:**
  + 36 full-size (18"x26") sheet pans on adjustable slides
  + 3" spacing between slides
  + Practical capacity: 180-200 loaves in bannetons (arranged on pans)
* **Temperature Range:**
  + Proof mode: 85°F - 115°F with humidity
  + Retard mode: 38°F - 50°F
  + Current setting: 40°F for overnight cold proof
* **Humidity Control:**
  + Range: 30% - 100% RH
  + Current setting: 85% RH for proofing
* **Power:**
  + Electrical: 120V, 13.1 amps
  + Power consumption: 1.575 kW
* **Features:**
  + Insulated cabinet (35% energy savings vs non-insulated)
  + Clear door for visual monitoring
  + Digital temperature and humidity controls
  + Interior LED lighting
  + Casters for mobility
* **Dimensions:** 31"W x 39"D x 80"H
* **Weight:** 340 lbs empty
* **Purchase:** New, 2023, $1,499
* **Energy Cost:** ~$28/month (runs continuously)
* **Usage Pattern:**
  + Loaded: 6:00 PM - 9:00 PM (shaped loaves going in)
  + Cold retard: 9:00 PM - 5:00 AM (8-10 hours)
  + Unloaded for baking: 5:00 AM - 11:00 AM
  + Available for day-proofing: 11:00 AM - 6:00 PM

**4. WALK-IN COOLER**

* **Make/Model:** Amerikooler QS0608-4 (Indoor, Self-Contained)
* **Interior Dimensions:** 6'W x 8'D x 7.5'H = 360 cubic feet
* **Capacity:**
  + Bulk ingredient storage: ~800 lbs dry goods in sealed containers
  + Perishables: dairy, eggs, butter (dedicated shelf, 150 lbs)
  + Rolling rack storage: Space for 2 x 20-pan racks
  + Focuses/ciabatta tray storage: 1 dedicated shelf section
* **Temperature:**
  + Set point: 38°F (3.3°C)
  + Range: 35°F - 42°F
* **Power:**
  + Self-contained refrigeration unit
  + Electrical: 208V, single-phase, 15 amps
  + Power consumption: ~2.1 kW when compressor running (40% duty cycle)
* **Features:**
  + 4" insulated panels (R-30 rating)
  + Heavy-duty aluminum floor
  + Cam-lift hinges on door
  + Interior lighting (LED, 40W)
  + Digital temperature display (interior and exterior)
  + High-temperature alarm (audible and visual)
* **Dimensions:** 6'10"W x 8'6"D x 8'6"H (exterior with refrigeration unit)
* **Purchase:** New, 2023, $8,400 (installed)
* **Installation:** Required concrete floor reinforcement, electrical - included in price
* **Energy Cost:** ~$65/month
* **Maintenance:** Quarterly condenser cleaning, annual refrigerant check

**5. REACH-IN REFRIGERATORS (2 units)**

* **Make/Model:** True T-49-HC (Two-Door Reach-In)
* **Capacity per unit:**
  + 49 cubic feet
  + 2 sections with 6 adjustable shelves total
* **Temperature:** 33°F - 38°F (set at 36°F)
* **Power:**
  + Electrical: 115V, 11.5 amps
  + Power consumption: 1.2 kW per unit
  + ENERGY STAR certified (1.02 kWh/day)
* **Features:**
  + Heavy-duty PVC coated wire shelves (each rated 300 lbs)
  + Stainless steel interior and exterior
  + Self-closing doors with gaskets
  + Digital temperature display
  + Casters with locking brakes
* **Dimensions:** 54"W x 32"D x 78"H each
* **Weight:** 420 lbs each
* **Purchase:** Used, 2023, $3,800 for both units
* **Placement:**
  + Unit 1: Near mixing station (high-use dairy, eggs for enriched doughs)
  + Unit 2: Near shaping bench (butter, specialty ingredients)
* **Energy Cost:** ~$18/month total for both units
* **Contents Typical:**
  + Unit 1: Whole milk (2 gal), butter (20 lbs), eggs (15 dozen), honey (5 lbs), fresh yeast backup
  + Unit 2: Olives (bulk), specialty add-ins, small-batch ingredients, backup perishables

**WORK SURFACES & MATERIAL HANDLING**

**6. PRIMARY SHAPING BENCH**

* **Make/Model:** Regency 30"x96" Stainless Steel Work Table, 16-gauge
* **Surface:** 16-gauge (0.063") stainless steel top, #4 finish (brushed)
* **Capacity:** 600+ lbs evenly distributed
* **Features:**
  + 1.5" backsplash (rear)
  + Adjustable galvanized undershelf (rated 400 lbs)
  + Adjustable bullet feet (33"-35" height range)
* **Dimensions:** 96"L x 30"D x 34"H
* **Weight:** 145 lbs
* **Purchase:** New, 2023, $502
* **Usage:** Primary surface for dividing, pre-shaping, final shaping all doughs
* **Surface Temperature Consideration:** Ambient, room temperature (68-72°F)

**7. MIXING PREP TABLE**

* **Make/Model:** Regency 24"x60" Stainless Steel Work Table, 18-gauge
* **Surface:** 18-gauge (0.048") stainless steel
* **Capacity:** 500 lbs evenly distributed
* **Features:**
  + No backsplash (allows for flexible positioning)
  + Galvanized undershelf
  + Casters with locking brakes (mobile configuration)
* **Dimensions:** 60"L x 24"D x 34"H
* **Weight:** 98 lbs
* **Purchase:** New, 2023, $224
* **Usage:** Ingredient staging before mixing, recipe scaling, autolyse setup
* **Mobility:** Can be moved to create different work zones as needed

**8. COOLING RACKS (4 units)**

* **Make/Model:** Commercial 20-Tier Sheet Pan Rack, End-Load
* **Capacity per rack:**
  + 20 full-size sheet pans (18"x26")
  + Each tier rated: 30 lbs
  + Total capacity: 480 lbs per rack
* **Pan Spacing:** 3.5 inches between tiers
* **Features:**
  + Welded aluminum frame
  + 5" locking casters (4 per rack)
  + End-loading design (pan slides in on short side)
* **Dimensions:** 20.5"W x 26"D x 72"H
* **Weight:** 55 lbs empty
* **Purchase:** New, 2023, $740 total (4 racks @ $185 each)
* **Current Use:**
  + Rack 1: Hot bread coming from oven (rotating use)
  + Rack 2: Cooling sourdough loaves (2-3 hour cooling period)
  + Rack 3: Cooling enriched breads (sandwich, focaccia)
  + Rack 4: Packaging staging / wholesale order assembly
* **Critical Constraint:** Cooling time is 2-4 hours per loaf before packaging. During peak production (Saturday), all 4 racks are at capacity, limiting ability to do additional bakes.

**9. PROOFING BASKETS (Bannetons)**

* **Quantity:** 200 total
  + 150 x Round (boule) - 9" diameter, 3.5" height (for 800-900g loaves)
  + 50 x Oval (bâtard) - 12"L x 6"W x 3.5"H (for 900-1000g loaves)
* **Material:** Natural rattan cane
* **Capacity:** Each rated for 800g - 1200g dough
* **Liners:** 200 linen liners (washable, rotated weekly)
* **Purchase:** New, 2023, $1,180 total (~$5.90 each average)
* **Maintenance:** Weekly shake-out of flour, monthly sun/air drying, liners washed on 2-week rotation
* **Storage:** Stacked on dedicated shelving near shaping bench
* **Critical Constraint:** 200 baskets = maximum 200 loaves in retarder overnight. This caps next-day sourdough production.

**SMALL EQUIPMENT & TOOLS**

**10. DIGITAL SCALES**

* Large bench scale (0-50 lbs, 0.1 oz precision): 2 units - $120 each
* Small ingredient scale (0-11 lbs, 0.01 oz precision): 3 units - $65 each
* Dough portioning scale (0-11 lbs, 1g precision): 2 units - $85 each
* **Total Investment:** $635
* **Critical Tool:** All recipes weighed, no volumetric measurements in production

**11. MIXING BOWLS & CONTAINERS**

* Large mixing bowls (20-quart stainless steel): 8 units - $45 each = $360
* Bulk fermentation tubs (22-quart Cambro, clear polycarbonate with lids): 12 units - $38 each = $456
* Ingredient storage containers (8-quart airtight): 20 units - $18 each = $360
* **Total Investment:** $1,176
* **Critical Use:** Clear fermentation tubs allow visual monitoring of bulk fermentation progress (volume rise, bubble formation)

**12. HAND TOOLS**

* Bench scrapers (steel): 10 units - $12 each = $120
* Bowl scrapers (plastic): 15 units - $4 each = $60
* Dough whisks (Danish): 4 units - $18 each = $72
* Lames (razor blade holders for scoring): 6 units + 1000 blades - $180 total
* Proofing cloths (couche, for baguettes): 3 x 6' lengths - $145 total
* Oven peels (long-handle, solid): 3 units - $65 each = $195
* Spray bottles (water, for steam): 6 units - $8 each = $48
* Dough docker (spiked roller): 2 units - $15 each = $30
* Thermometers (instant-read digital): 5 units - $25 each = $125
* **Total Investment:** $975

**FRONT OF HOUSE EQUIPMENT**

**13. DISPLAY CASE**

* **Make/Model:** Structural Concepts CO57D (Countertop Dry Bakery Case)
* **Configuration:** 3 tiers, straight glass front
* **Capacity:**
  + Display area: 21 cubic feet
  + Practical capacity: ~35-40 loaves displayed at one time
* **Dimensions:** 77"W x 35"D x 27"H (sits on counter)
* **Features:**
  + Tempered glass on front and sides
  + Sliding rear access doors
  + LED interior lighting (20W)
  + Laminate base (matches counter aesthetic)
  + Angled shelves for optimal product visibility
* **Power:** 120V, 2 amps (lighting only - dry case, no refrigeration)
* **Purchase:** New, 2023, $2,850
* **Display Protocol:**
  + Top shelf: Specialty/seasonal loaves, higher-priced items
  + Middle shelf: Core sourdough varieties
  + Bottom shelf: Baguettes, sandwich loaves, focaccia

**14. POINT-OF-SALE SYSTEM**

* **Hardware:**
  + iPad-based system (10.2", 8th generation): $329
  + Cash drawer (Star Micronics): $195
  + Receipt printer (thermal, Bluetooth): $149
  + Card reader (Square Terminal): $299
  + Backup power (UPS battery): $120
* **Software:** Square for Retail
  + Monthly subscription: $60/month
  + Transaction fees: 2.6% + $0.10 per card transaction
* **Features:**
  + Inventory tracking (real-time deduction)
  + Customer data collection (email for marketing)
  + Sales reporting (daily, weekly, monthly views)
  + Employee clock-in function
  + Integrated with website for online orders
* **Total Hardware Investment:** $1,092
* **Annual Software Cost:** $720 + ~$3,600 in transaction fees = $4,320

**15. PACKAGING SUPPLIES INVENTORY**

* Paper bread bags (kraft, 6"x3"x12"): 10,000 units on hand - $0.14 each bulk
* Wax-lined bags (for sandwich loaves): 5,000 units - $0.20 each
* Baguette bags (long, narrow): 3,000 units - $0.12 each
* Stickers/labels (branded, round): 15,000 units - $0.05 each
* Bakery twine: 10 rolls - $14 per roll
* Tissue paper (for wholesale): 2,000 sheets - $0.09 each
* Wholesale boxes (corrugated, reinforced): 500 units - $1.28 each
* **Typical Order Value:** ~$2,040 for 3-month supply
* **Storage:** Dedicated dry storage room, organized by product type

**2.3 Utilities and Building Systems**

**HVAC:**

* Commercial HVAC system (cooling and heating)
* Kitchen exhaustion hood over oven (required by code): 6'W x 4'D, 1200 CFM
* Make-up air unit to balance extraction
* Average utility cost: $180/month (gas heat in winter, AC in summer)

**WATER:**

* Commercial water service
* 3-compartment sink (40"W x 20"D each compartment)
* 2 handwashing stations (pedal-operated)
* Mop sink with floor drain
* Average utility cost: $85/month

**ELECTRICAL:**

* 200-amp, 3-phase service (upgraded during build-out: $6,500)
* Oven: 72 amps on dedicated circuit
* Mixer: 11.5 amps on dedicated circuit
* Walk-in cooler: 15 amps
* Reach-ins, retarder, general outlets: 60 amps combined
* Lighting (LED throughout): 500W total
* Average utility cost: $520/month (electric)

**WASTE:**

* Commercial trash service (3x/week pickup): $145/month
* Composting program (organic waste): $75/month
* Cardboard/paper recycling: Included in trash service

**3. STAFF AND SCHEDULE**

**3.1 Team Composition**

**EMPLOYEE #1: Marcus Chen (Owner/Head Baker)**

* **Role:** Head Baker, Owner, General Manager
* **Employment:** Full-time, salaried
* **Compensation:**
  + Base draw: $52,000/year ($4,333/month)
  + Additional income: Bakery profit (targets $18,000-$25,000/year after expenses)
  + Effective total: ~$70,000-$77,000/year
* **Schedule:** Tuesday-Saturday, variable hours (typically 4:00 AM - 2:00 PM, 50 hours/week average)
* **Primary Responsibilities:**
  + Starter maintenance and levain building
  + Quality control for all products
  + Recipe development and refinement
  + Oven management (loading, timing, temperature control)
  + Staff training and oversight
  + Purchasing and vendor relationships
  + Financial management (bookkeeping, QuickBooks)
  + Customer relationship management (especially wholesale accounts)
  + Equipment maintenance coordination

**EMPLOYEE #2: Rachel Martinez (Production Baker)**

* **Role:** Production Baker
* **Employment:** Full-time, hourly
* **Compensation:** $19.50/hour
  + Guaranteed 40 hours/week (core schedule)
  + Typical 42-45 hours/week with overtime (time-and-a-half over 40)
  + Annual gross: ~$44,000-$46,000
* **Schedule:** Tuesday-Saturday, 4:30 AM - 1:00 PM (Monday off, Sunday off)
* **Primary Responsibilities:**
  + Mixing main production doughs (operates spiral mixer)
  + Bulk fermentation management (folds, monitoring)
  + Dough dividing and scaling (precision portioning)
  + Pre-shaping all bread
  + Final shaping (boules, bâtards, baguettes)
  + Loading/unloading retarder
  + First round of bakes (5:00 AM - 8:00 AM window)
  + Wholesale order preparation and packing
  + Production area cleaning

**EMPLOYEE #3: David Kim (Baker/Shift Supervisor)**

* **Role:** Baker and Morning Shift Supervisor
* **Employment:** Full-time, hourly
* **Compensation:** $18.00/hour
  + Guaranteed 38 hours/week
  + Annual gross: ~$35,000
* **Schedule:** Wednesday-Sunday, 5:00 AM - 1:30 PM (Monday-Tuesday off)
* **Primary Responsibilities:**
  + Assistance with final shaping during peak days
  + Oven monitoring and second/third bake rounds
  + Focaccia and specialty bread production
  + Cooling and packaging coordination
  + Quality control (visual inspection of all products)
  + FOH restocking (moving product from cooling to display)
  + Opening preparation for retail (Sunday supervisor role)
  + Mid-level troubleshooting and problem-solving
  + Training backup for Rachel

**EMPLOYEE #4: Sarah Thompson (Front-of-House Lead)**

* **Role:** Retail Counter Lead, Customer Service
* **Employment:** Part-time (30 hours/week), hourly
* **Compensation:** $16.50/hour
  + 30 hours/week target
  + Annual gross: ~$25,700
* **Schedule:** Wednesday-Sunday, 6:30 AM - 12:30 PM (6 hours/day, 5 days)
* **Primary Responsibilities:**
  + Opening retail counter (display stocking)
  + Customer service (sales, education about products)
  + POS operation and cash handling
  + Packaging retail orders (slicing bread when requested)
  + Maintaining FOH cleanliness and organization
  + Social media updates (Instagram photos of daily bread)
  + Online order fulfillment (packing, customer communication)
  + Restroom checks and cleaning
  + Wholesale customer hand-offs (counter pickup)
  + End-of-shift inventory reporting to Marcus

**Additional Staffing Notes:**

* **Weekend Coverage Gap:** Sunday 12:30 PM - 2:00 PM closing is handled by David (stays late, compensated)
* **Monday (Closed Day):** Marcus comes in alone for 3-4 hours (10:00 AM - 2:00 PM) for:
  + Deep cleaning equipment
  + Starter maintenance and levain build for Tuesday production
  + Administrative work (ordering, bookkeeping)
  + Equipment maintenance/minor repairs
* **Flexibility:** Rachel and David are cross-trained; can cover each other's shifts in emergencies
* **Seasonal Adjustment:** During holiday weeks (Thanksgiving, Christmas), all staff work extended hours; Marcus brings in part-time help (~$15/hour) for 10-15 additional hours

**3.2 Daily Schedules - Minute-by-Minute**

**TUESDAY - FRIDAY (Typical Weekday)**

**MARCUS CHEN - HEAD BAKER**

**3:45 AM - 4:00 AM: Arrival and Startup (15 min)**

* Arrive at bakery, unlock, disable security system
* Turn on all lights (BOH)
* Quick walk-through safety/equipment check
* Turn on oven (begins preheat to 500°F - will take 60-75 minutes)
* Confirm retarder contents (loaves from previous day, shaped and cold-proofed overnight)
* Put on work clothes, wash hands, review day's production notes

**4:00 AM - 4:30 AM: Starter Management and Levain Build (30 min)**

* Pull mother starter from walk-in (stored at 50°F in sealed container)
* Assess starter health: smell, appearance, rise from previous feeding
* Discard portion of starter (200g, ~20% of mass)
* **Feed mother starter:** Mix 200g starter + 200g water (80°F) + 200g flour (85% bread flour, 15% whole wheat)
* Mix until homogeneous, transfer to clean container, mark with tape
* Store in ambient area (68°F target) for 8-12 hour fermentation (will be ready by afternoon for next day's levain)
* **Build production levain for tomorrow's sourdough:**
  + Calculation: Tomorrow's sourdough requires 4.5 kg levain total (20-22% of flour weight across all sourdough batches)
  + Mix: 500g ripe starter + 2000g water (80°F) + 2000g flour (85% bread, 15% whole wheat)
  + Mix until smooth, transfer to large fermentation tub, cover
  + Mark with time and volume level (visual rise indicator)
  + Place in 78°F ambient area (near oven exhaust or in slightly warmed spot)
  + Target: Ready in 6-8 hours (peak activity, should double in volume)
* Clean mixing area, sanitize tools

**4:30 AM - 5:00 AM: Oven Check and First Load Prep (30 min)**

* Verify oven temperature (target: 500°F on all 3 decks)
* Inject test steam burst to verify system (8-second pulse)
* Pull first batch of shaped loaves from retarder:
  + Priority: 20 Country Sourdough loaves (shaped previous evening)
  + These have been cold-proofing for ~10 hours at 40°F
* Transfer bannetons from retarder to speed rack near oven
* Perform **"poke test"** on each loaf: finger presses dough, should slowly spring back halfway (indicates proper proof level)
* Dust loaves with rice flour (prevents sticking)
* Prepare lames (fresh razor blades), oven peels, steam spray bottles

**5:00 AM - 5:10 AM: Score and Load First Bake (10 min)**

* Working with 8 loaves at a time (deck capacity):
  + Turn loaf from banneton onto peel
  + **Score** with lame: Deep cross pattern for Country Sourdough (1/2" deep cuts)
  + Slide loaf onto hot oven stone (deck 1)
* Load 8 loaves on deck 1, 8 loaves on deck 2, 4 loaves on deck 3 (20 total)
* **Immediately inject steam:** 3-second burst, then 8-second sustained burst
* Close oven door, close vents (trap steam)
* **Set timer:** 38 minutes total bake
  + 15 minutes: Full steam (vents closed)
  + 23 minutes: Vents open (dry heat for crust development)
* Log start time on production sheet

**5:10 AM - 5:30 AM: Rachel Arrives - Coordination (20 min)**

* Greet Rachel, review day's production priorities and any deviations
* Rachel begins first dough mix (see Rachel's schedule)
* Marcus continues with prep for next oven load:
  + Pull 15 Whole Grain Sourdough loaves from retarder (poke test, stage)
  + Prepare workspace for second scoring/loading round

**5:30 AM - 5:45 AM: Second Oven Load Prep (15 min)**

* Monitor first bake (currently 30 minutes in, visual check through door)
* Prepare 15 Whole Grain loaves for baking:
  + Turn from bannetons, score with radial pattern (5 cuts from center)
  + Stage on peels near oven

**5:45 AM - 6:00 AM: Unload First Bake, Load Second Bake (15 min)**

* **Timer goes off:** First bake complete (20 Country Sourdough loaves)
* Open oven, use peel to pull loaves one by one
* **Visual quality check:** Crust color (deep golden-brown), scoring pattern (good "ear" development), hollow sound when tapped on bottom
* Transfer hot loaves to cooling rack #1
* **Immediately load second bake:** 15 Whole Grain loaves
  + 5 loaves per deck (3 decks)
* Inject steam (same protocol)
* Set timer: 40 minutes (Whole Grain requires slightly longer bake)
* Begin oven cooldown protocol for sandwich loaves (lower temperature to 360°F)

**6:00 AM - 6:30 AM: Production Monitoring and Wholesale Prep (30 min)**

* Monitor Rachel's dough mixing progress (provide guidance if needed)
* Pull wholesale order list for the day:
  + **Cedar Street Café:** 10 Country Sourdough, 12 Baguettes (8:00 AM pickup)
  + **Northside Market:** 8 Multigrain, 5 Whole Wheat Sandwich (9:00 AM delivery)
* Retrieve delivery boxes and tissue paper, pre-stage in wholesale area
* Check on cooling loaves from first bake (30 minutes cooled so far, need 2+ more hours before packaging)

**6:30 AM - 7:00 AM: Sandwich Loaf Production Oversight (30 min)**

* Assist Rachel with Whole Wheat Sandwich dough final stages:
  + Verify dough temperature (should be 76-78°F after mixing)
  + Check gluten development (pull small piece, stretch for "windowpane" - should be thin, translucent without tearing)
  + Transfer to oiled fermentation tub, mark volume
* Cover and place in warm area (78-80°F, near oven) for bulk fermentation (60-90 min)
* Set alarm/note: Check dough at 8:00 AM

**7:00 AM - 7:15 AM: Unload Second Bake (15 min)**

* Pull 15 Whole Grain loaves from oven
* Quality check (darker crust expected due to higher whole grain content)
* Transfer to cooling rack #2
* Oven now at 360°F for sandwich loaves (ready)

**7:15 AM - 8:00 AM: Third Bake Prep and Load - Baguettes (45 min)**

* **Baguette Protocol:** These are same-day production (no retarding)
* Rachel shaped baguettes at 6:00 AM; they've been proofing on couche at room temp for ~70 minutes
* **Baguette poke test:** Very gentle press, should spring back mostly (less proofed than sourdough)
* Raise oven temperature back to 480°F (baguettes need hot, fast bake)
* Score baguettes: Single long slash down center at 30-degree angle, 1/4" deep
* Load baguettes:
  + Use special baguette loader (wide peel or baguette transfer board)
  + 8 baguettes per deck, 24 total (staggered arrangement)
* Heavy steam (baguettes need lots of steam for thin, crackly crust)
* **Timer:** 22 minutes
* Monitor closely: Baguettes can over-brown quickly

**8:00 AM - 8:30 AM: Sandwich Loaf Shaping and Final Tasks (30 min)**

* Check Whole Wheat Sandwich dough bulk fermentation:
  + Should be doubled in volume (visual check)
  + Poke test: Indentation remains (fermentation complete)
* Divide dough into 20 pieces (850g each)
* Pre-shape into rough rounds, bench rest 20 minutes
* Final shape into tight logs, place in greased 9x5" loaf pans (20 pans)
* Cover pans, place in warm area for final proof (60-90 minutes, until domed 1" over rim)
* Set alarm: Check at 9:30 AM
* **Unload baguettes from oven** (timer went off at 8:22 AM)
  + 24 baguettes, golden-brown, crackly crust
  + Transfer to cooling rack #3
  + Baguettes cool quickly (30-45 minutes)

**8:30 AM - 9:00 AM: Wholesale Order Fulfillment (30 min)**

* **Cedar Street Café order (8:00 AM pickup - slightly running late, common):**
  + Select 10 best-looking Country Sourdough loaves from first bake (now cooled ~3 hours, ready)
  + Baguettes are cool enough (45 minutes elapsed)
  + Wrap each loaf in tissue paper, place in bakery box
  + Apply Parkside Bakery sticker/label
  + Stage at counter for pickup
  + Customer arrives at 8:15 AM, Sarah (FOH) handles transaction
* **Northside Market order:**
  + Pull 8 Multigrain, 5 Whole Wheat Sandwich (from previous day's production, fully cooled, stored in FOH holding)
  + Pack in reinforced boxes
  + Load into Marcus's vehicle for 9:00 AM delivery (10-minute drive)
  + **9:00 AM - 9:20 AM:** Marcus drives delivery (David covers oven monitoring)

**9:20 AM - 10:00 AM: Sandwich Loaf Final Proof Check and Bake (40 min)**

* Return from delivery
* Check sandwich loaves: Should be domed, ready to bake
* Load 20 loaf pans into oven (oven temperature lowered to 360°F)
  + 6-7 pans per deck (3 decks)
* No steam injection (enriched bread doesn't need steam)
* **Timer:** 38 minutes
* Monitor other production:
  + Review David's progress on focaccia (see David's schedule)
  + Check on Rachel's ciabatta shaping (see Rachel's schedule)

**10:00 AM - 10:40 AM: Unload Sandwich Loaves, Quality Check, Admin (40 min)**

* **Timer goes off:** 20 sandwich loaves done
* Pull loaves from oven, immediately remove from pans
* Transfer to cooling rack #4
* **Quality check protocol:**
  + Internal temperature: Should be 200-205°F (use instant-read thermometer on 3 random loaves)
  + Crust color: Golden-brown top, pale sides
  + Structure: Loaf holds shape when pan removed, no collapse
  + Log any issues in production notebook
* Begin paperwork/admin tasks:
  + Update daily production log (Google Sheet)
  + Check email for wholesale inquiries or online orders
  + Review ingredient inventory (flag low-stock items)
  + Plan next day's levain build calculations

**10:40 AM - 11:30 AM: Ciabatta Final Prep and Bake (50 min)**

* Rachel's ciabatta has finished cold bulk fermentation (in walk-in since 7:00 AM)
* Assist Rachel with gentle dividing process:
  + Turn dough onto heavily floured surface
  + Cut into 15 pieces (600g each) with bench scraper
  + Minimal handling (preserve gas bubbles)
* Ciabatta needs very short final proof (30 minutes at room temp)
* At 11:20 AM: Load ciabatta into 480°F oven with steam
* **Timer:** 30 minutes
* While ciabatta bakes, collaborate with team on afternoon production priorities

**11:30 AM - 12:00 PM: Afternoon Check-in and Prep for Tomorrow (30 min)**

* **Unload ciabatta** (golden, rustic appearance, irregular shape expected)
* Transfer to cooling rack
* Check on levain built at 4:30 AM:
  + Should be doubled, bubbly, slight dome on surface (peak activity)
  + **If ready:** Move to retarder to slow down (will use tomorrow)
  + **If not ready:** Allow another 1-2 hours, check again
* Meet with Rachel and David:
  + Review any production issues from morning
  + Confirm tomorrow's production plan (any changes to standard schedule)
  + Assign afternoon shaping responsibilities (tomorrow's retarded loaves)

**12:00 PM - 1:00 PM: Afternoon Shaping Session (60 min)**

* This is prep for **NEXT DAY's** bake (sourdough loaves will retard overnight)
* Pull tomorrow's dough batches that are finishing bulk fermentation:
  + 50 Country Sourdough (mixed by Rachel at 6:30 AM, bulk ferment complete by noon)
  + 25 Whole Grain Sourdough
* **Divide, pre-shape, bench rest, final shape** (see detailed process below)
* Place shaped loaves in bannetons, transfer to retarder
* Loaves will cold-proof overnight (40°F for 10-12 hours), ready for tomorrow's 5:00 AM bake

**1:00 PM - 2:00 PM: Cleanup, Final Tasks, and Close (60 min)**

* Supervise team cleanup:
  + Mixer bowl cleaned, sanitized
  + All work surfaces wiped down with sanitizer
  + Floors swept and mopped (production area)
  + Trash and compost emptied
* Final retarder load check (confirm all loaves staged correctly for tomorrow)
* Review FOH sales with Sarah:
  + What sold well today?
  + What remains unsold? (mark down, use for bread pudding, donate)
* Lock up BOH, leave FOH open (Sarah's shift continues until retail close)
* Depart 2:00 PM (10-hour day)

**RACHEL MARTINEZ - PRODUCTION BAKER**

**4:30 AM - 4:35 AM: Arrival and Prep (5 min)**

* Arrive, clock in at POS system
* Put on work clothes, apron, hairnet
* Wash hands thoroughly (30-second protocol)
* Quick greeting with Marcus, receive day's priorities

**4:35 AM - 5:00 AM: Mixer Prep and First Dough Mix - Baguette (25 min)**

* **Baguette dough uses poolish** (mixed previous afternoon at 4:00 PM by David, has fermented 12-14 hours)
* Pull poolish from retarder:
  + Check appearance (bubbly, domed, fermented correctly)
  + Bring to room temperature (10-minute rest)
* **Scale ingredients for Baguette batch:**
  + Final dough flour: 3200g bread flour (60% of total flour)
  + Poolish: 4000g (made with 2000g flour, 2000g water - accounts for 40% of total flour)
  + Water: 1400g at 70°F (calculated to achieve 76°F dough temp)
  + Salt: 100g (2% of total flour)
  + Instant yeast: 12g (0.24% of total flour - low amount due to poolish)
* **Mixing protocol:**
  + Add poolish, water, flour to mixer bowl
  + **Low speed:** 3 minutes (incorporate, autolyse begins)
  + **Rest:** 20 minutes (autolyse, gluten development without mixing)
  + Add salt and yeast
  + **Low speed:** 2 minutes (incorporate)
  + **High speed:** 6 minutes (develop gluten, dough becomes smooth and elastic)
* **Target dough temperature:** 76°F (check with thermometer)
* Transfer to oiled tub, cover, mark volume
* **Bulk fermentation:** 90 minutes at room temp with 2 folds at 30-minute intervals

**5:00 AM - 5:30 AM: Ingredient Staging for Main Sourdough Batches (30 min)**

* **Today's sourdough production:**
  + 50 Country Sourdough loaves (main batch - 45 kg total dough)
  + 25 Whole Grain Sourdough loaves (22 kg total dough)
  + 20 Seeded Multigrain loaves (18 kg total dough)
* Check levain readiness (built by Marcus yesterday afternoon, should be at peak):
  + Visual: Doubled volume, domed top, bubbly throughout
  + Float test: Drop small piece in water - should float (indicates good gas production)
* **Stage ingredients on prep table** for first sourdough batch (Country):
  + Bread flour: 38 kg (weighed into large bins)
  + Whole wheat flour: 7 kg
  + Water: 33 kg (temperature calculated for 76°F dough temp, likely ~78-80°F water)
  + Levain: 9 kg (20% of flour weight)
  + Salt: 900g (2% of flour weight)
* All ingredients measured precisely using digital scales
* Note: This is a LARGE batch, will require 2 sequential mixer loads (mixer capacity = 20 kg dough per batch)

**5:30 AM - 6:30 AM: First Sourdough Mix - Country Sourdough Batch 1 (60 min)**

* **First half of Country Sourdough (22.5 kg dough):**
  + **Autolyse:** Flour (22.5 kg) + water (16.5 kg) in mixer bowl
  + **Low speed:** 2 minutes (just combined, shaggy mass)
  + **Rest:** 40 minutes (Marcus is busy with oven, Rachel stages next ingredients)
* During autolyse rest, stage Batch 2 ingredients
* **Final mix:**
  + Add levain (4.5 kg) and salt (450g)
  + **Low speed:** 3 minutes (incorporate)
  + **High speed:** 8 minutes (gluten development, dough becomes smooth, pulls away from bowl)
* **Check dough temperature:** Should be 76-78°F (if too warm or cool, adjust water temp for next batch)
* Transfer to bulk fermentation tub (22-quart Cambro container), mark with tape to track volume increase
* **Bulk fermentation:** 4-5 hours with 4 sets of stretch-and-folds every 45 minutes

**6:30 AM - 7:30 AM: Second Sourdough Mix - Country Sourdough Batch 2 (60 min)**

* Repeat same process for second half (22.5 kg dough)
* While this batch is in autolyse, perform **first fold** on Batch 1:
  + Wet hands, reach under dough, grab edge, stretch up and fold over center
  + Rotate tub 90 degrees, repeat 4 times total
  + Cover, mark time of fold (tracking for next fold in 45 min)
* Complete second batch mix, transfer to fermentation tub
* Clean mixer bowl, sanitize, ready for next dough type

**7:30 AM - 8:30 AM: Whole Grain and Multigrain Sourdough Mixing (60 min)**

* **Whole Grain Sourdough batch (22 kg total):**
  + Flour: 13 kg bread flour, 7 kg whole wheat, 2 kg rye
  + Water: 17 kg (higher hydration, 78%)
  + Levain: 4.8 kg (22% of flour)
  + Salt: 440g
* **Mixing protocol:** Same as Country (autolyse, final mix with levain/salt)
* Transfer to fermentation tub, mark volume
* **Multigrain Sourdough batch (18 kg total):**
  + Flour: 13.5 kg bread flour, 4.5 kg whole wheat
  + Water: 13 kg
  + Levain: 3.6 kg
  + Salt: 360g
  + **Seed mix:** 2.7 kg (sunflower, flax, sesame - pre-toasted, cooled)
* Mix protocol: Add seed mix with salt in final mix stage
* Transfer to fermentation tub
* Clean mixer thoroughly, sanitize

**8:30 AM - 9:30 AM: Fold Cycles and Whole Wheat Sandwich Dough Prep (60 min)**

* **Folds on all sourdough batches:**
  + Country Batch 1: 3rd fold (started bulk at 6:30 AM, now 2 hours in)
  + Country Batch 2: 2nd fold
  + Whole Grain: 1st fold
  + Multigrain: 1st fold
* Each fold takes ~2 minutes per batch, 8 minutes total
* **Whole Wheat Sandwich Loaf dough:**
  + This is Marcus's focus (he oversees), but Rachel assists with mixing
  + Enriched dough with butter, honey (see Marcus's schedule for details)
  + Bulk fermentation is shorter (60-90 min) due to commercial yeast
* During this hour, also check on baguette dough:
  + Should be finished bulk (90 min elapsed at 6:30 AM)
  + Ready for dividing and shaping

**9:30 AM - 10:30 AM: Baguette Shaping and Proofing (60 min)**

* Baguette dough: 8.7 kg total, needs to be divided into 40 baguettes (220g each, accounting for bake loss)
* Turn dough onto lightly floured surface
* **Divide** using bench scraper and scale: 40 precise portions
* **Pre-shape:** Each piece into small cylinder, bench rest 20 minutes
* **Final shape baguettes:**
  + Flatten pre-shape into rectangle
  + Fold top 1/3 down, seal seam with heel of hand
  + Fold in half, seal seam
  + Roll with hands from center outwards, applying even pressure
  + Taper ends (traditional baguette shape, pointed ends)
  + Target length: 14-16 inches
* Place shaped baguettes on couche (linen proofing cloth), seam-side up
* Pleat couche between each baguette to provide support and separation
* **Final proof:** 60-75 minutes at room temp (until puffy, poke test shows slow spring-back)
* Baguettes will be ready to bake around 11:00 AM (Marcus will handle scoring and oven loading)

**10:30 AM - 11:30 AM: Ciabatta Preparation (60 min)**

* **Ciabatta dough uses biga** (stiff preferment, mixed yesterday at 4:00 PM, cold-fermented overnight)
* Pull biga from walk-in cooler
* **Ciabatta dough specs:**
  + Total dough: 9 kg (for 15 loaves at 600g each)
  + Flour: 5.4 kg (bread flour, high-protein 12.7%)
  + Water: 4.8 kg (85% hydration - this is a VERY wet dough)
  + Biga: 1.8 kg (30% of total flour weight)
  + Salt: 108g (2%)
  + Olive oil: 540g (10% - adds flavor and tenderizes)
  + Instant yeast: 11g (very small amount, just a boost)
* **Mixing protocol:**
  + Add biga, most of water, flour, salt, yeast to mixer bowl
  + **Low speed:** 3 minutes (shaggy, sticky mass)
  + **Bassinage technique:** Slowly stream in remaining water and olive oil while mixer runs on low
  + **High speed:** 5 minutes (dough becomes very sticky, glossy, starts to pull away from bowl - but still very slack)
* Transfer to heavily oiled large tub (22-quart)
* **Bulk fermentation:** 3 hours with 4 stretch-and-folds at 45-minute intervals
  + Folds must be done with oiled hands (dough is extremely sticky)
* Cover, place in warm area (78°F), mark volume

**11:30 AM - 12:00 PM: Final Sourdough Fold Cycles and Prep for Shaping (30 min)**

* **Final folds on all sourdough batches:**
  + Country Batch 1: 4th and final fold (now 5.5 hours into bulk, nearing completion)
  + Country Batch 2: 4th fold (5 hours in)
  + Whole Grain: 3rd fold (3.5 hours in)
  + Multigrain: 3rd fold (3.5 hours in)
* **Assess bulk fermentation completion:**
  + Country Batch 1: Should be 75-100% increased in volume, domed surface, bubbles visible on top and sides
  + **If ready:** Flag for Marcus, prepare shaping area
  + **If not ready:** Allow another 30-60 minutes, check again
* Clear and sanitize primary shaping bench (96" table)
* Stage empty bannetons (need 50 round for Country, 25 round for Whole Grain, 20 oval for Multigrain)
* Have bench scraper, scale, and flour ready

**12:00 PM - 2:00 PM: Afternoon Shaping Session for Next Day's Loaves (120 min)**

* **This is the most labor-intensive period of Rachel's day**
* Working alongside Marcus and David, shaping all loaves that will retard overnight
* **Country Sourdough (50 loaves, Batch 1 and Batch 2 combined = 45 kg dough):**
  + Turn dough onto lightly floured surface (minimal flour - dough should be slightly tacky)
  + **Divide:** Use bench scraper and scale, 900g per loaf (50 portions)
  + **Pre-shape:** Each piece into loose round, bench rest 25 minutes
  + **Final shape - bâtard (oval):**
    - Flatten pre-shape into rectangle (short side toward you)
    - Fold top edge down to center, press to seal
    - Fold bottom edge up to center, press to seal
    - Fold in half (top to bottom), seal seam with heel of hand
    - Roll gently with hands to create slight taper at ends
    - Target shape: Oval, 10-12 inches long, tight skin on top surface
  + Place shaped loaf seam-side UP in floured oval banneton
  + Transfer bannetons to speed racks
* **Whole Grain Sourdough (25 loaves, 22 kg dough):**
  + Divide: 880g per loaf
  + Pre-shape: Loose round, 25-minute rest
  + **Final shape - boule (round):**
    - Place pre-shape top-side down on unfloured surface
    - Pull edges outward and fold toward center, creating tension
    - Flip over (seam on bottom), cup hands around dough
    - Drag across surface in circular motion to tighten skin
  + Place seam-side UP in floured round banneton
* **Seeded Multigrain (20 loaves, 18 kg dough):**
  + Divide: 900g per loaf
  + Pre-shape: Loose oval, 25-minute rest
  + Final shape: Oval (bâtard style)
  + Place in oval bannetons

**2:00 PM - 2:30 PM: Load Retarder and Final Cleanup (30 min)**

* All shaped loaves now in bannetons (95 total loaves)
* Cover each banneton with plastic wrap or shower cap (prevent drying)
* Transfer bannetons from speed racks into retarder:
  + Organize by product type for easy identification tomorrow morning
  + Ensure air circulation (don't overpack)
* Retarder set to 40°F, 85% humidity
* Loaves will cold-proof for 10-12 hours (overnight), ready for tomorrow's 5:00 AM bake
* **Final cleanup:**
  + Clean all work surfaces with sanitizer
  + Wash and sanitize all mixing bowls, tools, scrapers
  + Sweep and mop production floor
  + Empty compost and trash
  + Wash hands, change out of work clothes
* Clock out at POS: 2:30 PM (10-hour shift)

**DAVID KIM - BAKER/SHIFT SUPERVISOR**

*David's schedule starts at 5:00 AM (one hour after Marcus and Rachel). He focuses on secondary production tasks, oven monitoring, and FOH coordination.*

**5:00 AM - 5:15 AM: Arrival and Morning Assessment (15 min)**

* Arrive, clock in
* Quick check-in with Marcus (review day's priorities, any special needs)
* Visual scan of production area:
  + What's in the oven? (Marcus's first bake underway)
  + What's on the bench? (Rachel mixing dough)
  + What's proofing? (Check retarder contents for loaves coming out soon)
* Wash hands, put on work clothes

**5:15 AM - 6:00 AM: Focaccia Dough Mixing (45 min)**

* **Today is Tuesday (Rosemary Focaccia day - production schedule)**
* **Focaccia batch:** 5 kg total dough (makes 4 sheets at ~1200g each, cut into 24 portions total)
* **Recipe:**
  + Flour: 2800g bread flour (100%)
  + Water: 2380g at 75°F (85% hydration)
  + Salt: 56g (2%)
  + Instant yeast: 28g (1%)
  + Olive oil (in dough): 112g (4%)
  + Levain (optional enhancement): 448g (16% - adds complexity)
* **Mixing:**
  + Combine flour, water, salt, yeast, levain in mixer bowl
  + **Low speed:** 3 minutes (just combined)
  + **Rest:** 20 minutes (short autolyse)
  + Add olive oil
  + **Low speed:** 2 minutes (incorporate oil)
  + **High speed:** 5 minutes (smooth, glossy dough - should be very sticky and slack)
* Transfer to oiled tub (22-quart), cover
* **Bulk fermentation:** 2-3 hours at room temp with 3 sets of folds at 45-minute intervals
  + Alternatively: Can immediately transfer to walk-in cooler for long cold fermentation (8-24 hours) - this is Marcus's preferred method for deeper flavor
  + **Today's plan:** Cold ferment immediately, will shape and bake this afternoon or tomorrow morning

**6:00 AM - 6:30 AM: Oven Monitoring and Second Bake Prep (30 min)**

* Marcus is managing first and second oven loads (Country Sourdough, Whole Grain)
* David assists:
  + Monitor oven timer
  + Prepare cooling racks (ensure empty racks are positioned near oven)
  + Help transfer hot loaves from oven to racks (Marcus pulls, David receives and stages)
* During this time, also assess FOH needs:
  + Is display case clean and ready? (Sarah will stock when she arrives at 6:30 AM)
  + Any wholesale orders needing prep? (Assist Marcus if needed)

**6:30 AM - 7:00 AM: Sandwich Loaf Assistance (30 min)**

* Marcus is focusing on Whole Wheat Sandwich dough (see Marcus's schedule)
* David assists with:
  + Greasing loaf pans (20 x 9"x5" pans, use butter or pan spray)
  + Staging pans on speed rack near shaping area
  + Later: Helping monitor bulk fermentation, performing poke tests

**7:00 AM - 8:00 AM: Olive & Rosemary Sourdough Prep (if Wednesday/Friday/Saturday) (60 min)**

* **Today is Tuesday:** Skip this task
* **On production days (Wed/Fri/Sat):**
  + Mix Olive & Rosemary variant (similar to Country Sourdough but with add-ins)
  + Kalamata olives: Pre-chop, drain, dry (12% of dough weight)
  + Fresh rosemary: Strip from stems, chop fine
  + Add olives and rosemary during final mix stage (after levain and salt)
  + Bulk fermentation: Same as standard sourdough

**8:00 AM - 9:00 AM: Mid-Morning Baking Round (60 min)**

* By this time, Marcus has loaded baguettes into oven (see Marcus's 8:00 AM slot)
* David's role:
  + **Monitor baguette bake:** Watch through oven window for color development
  + **Set backup timer** (redundancy in case Marcus's timer is missed)
  + When baguettes are done:
    - Help transfer to cooling racks
    - Visual quality check (report any issues to Marcus)
* Clean oven exterior (wipe down door glass, control panel)
* Prepare for sandwich loaf bake (Marcus is shaping loaves during this time)

**9:00 AM - 10:00 AM: Ciabatta Fold Cycles (60 min)**

* Rachel is managing ciabatta dough (see Rachel's 11:30 AM ciabatta prep)
* During ciabatta's 3-hour bulk fermentation, it needs 4 stretch-and-fold cycles
* David assists Rachel:
  + Every 45 minutes, perform folds on ciabatta (oiled hands, very gentle)
  + Between fold cycles: Help with other production tasks (packaging, cleaning)

**10:00 AM - 11:00 AM: Sandwich Loaf Baking and Monitoring (60 min)**

* Sandwich loaves are loaded by Marcus at ~9:30 AM (after final proof complete)
* David's primary focus:
  + **Monitor oven temperature** (should be steady at 360°F)
  + **Watch bake timer** (38 minutes)
  + At 25-minute mark: Visual check through door (color development on crust)
  + At timer completion: Help unload loaves
    - Use oven mitts, pull pans from oven
    - **Immediately remove loaves from pans** (prevents soggy bottom crust)
    - Transfer loaves to cooling rack
  + **Internal temp check:** Use instant-read thermometer on 2-3 loaves (should be 200-205°F)
* While loaves cool, clean loaf pans, dry, store for next use

**11:00 AM - 12:00 PM: FOH Restocking and Display Management (60 min)**

* **This is peak retail period (late morning)**
* Work with Sarah (FOH lead) to keep display case fully stocked:
  + Pull cooled loaves from racks (must be completely cool, at least 2 hours post-bake)
  + Transfer to FOH holding shelves or directly to display case
  + Arrange attractively in display case:
    - Visual merchandising: Larger loaves upright, baguettes angled, focaccia visible
    - Ensure price tags visible
* Replenish packaging supplies at counter (bags, stickers, twine)
* **Quality control:** Scan all products in display for any defects, remove if found
* Check FOH inventory:
  + What's selling fast? (need to ramp up production tomorrow?)
  + What's slow? (reduce production or mark down)

**12:00 PM - 1:00 PM: Ciabatta Shaping and Final Proof (60 min)**

* Ciabatta bulk fermentation complete (~3 hours elapsed)
* Assist Rachel or work independently:
  + Turn dough onto heavily floured surface (minimal disturbance, preserve gas)
  + **Divide:** Use bench scraper, cut into 15 portions (~600g each)
  + **No pre-shape, no intensive shaping:** Ciabatta is minimally handled
  + Gently coax each piece into rough slipper shape (elongated rectangle)
  + Place on parchment-lined sheet pans (heavily floured), 3 loaves per pan
* **Final proof:** 30-45 minutes at room temp (very short proof)
* Prepare oven: Preheat to 480°F, ready steam injection

**1:00 PM - 1:30 PM: Ciabatta Baking (30 min)**

* Load ciabatta into oven:
  + Slide parchment paper with loaves directly onto oven stone (or bake on sheet pans)
  + Heavy steam injection (ciabatta needs lots of steam for open crumb)
* **Bake time:** 25-30 minutes
* Monitor closely (high-hydration dough can be unpredictable)
* **Unload:** Transfer to cooling rack, remove parchment if stuck
* **Quality check:** Ciabatta should be golden, rustic (irregular shape), sound hollow when tapped

**1:30 PM - 2:00 PM: Afternoon Cleanup and Prep for Next Day (30 min)**

* **End-of-shift tasks:**
  + Clean oven area (sweep flour, wipe surfaces)
  + Organize cooling racks (ensure nothing blocking pathways)
  + Assist Marcus and Rachel with retarder loading (if needed)
  + Restock tools and supplies for tomorrow's shift (check flour bins, refill if low)
* **Check with Sarah on FOH needs:**
  + Any customer feedback to relay to Marcus?
  + Any issues with POS or packaging supplies?
* Clock out: 1:30-2:00 PM (8-8.5 hour shift)

**SARAH THOMPSON - FRONT-OF-HOUSE LEAD**

*Sarah's shift focuses entirely on customer service, retail operations, and maintaining the FOH environment.*

**6:30 AM - 7:00 AM: Opening Prep (30 min)**

* Arrive, clock in
* Unlock front door, turn on FOH lights
* **Display case setup:**
  + Wipe down glass (inside and out) with glass cleaner
  + Arrange any pre-cooled bread from previous day (limited stock at this time)
  + Set up empty trays for fresh bread (Marcus and David will restock as loaves cool)
* **POS system startup:**
  + Power on iPad, log in to Square
  + Verify cash drawer float ($150 in bills and coins)
  + Print test receipt (ensure printer working)
* **Retail area cleaning:**
  + Wipe down customer counter
  + Check seating area (4 counter stools) - wipe down, straighten
  + Sweep FOH floor
  + Restock napkins, wooden cutlery, small plates (for tasting samples)
* **Retail open at 7:00 AM sharp**

**7:00 AM - 8:00 AM: Early Morning Customers (60 min)**

* **Typical early customer profile:** Commuters grabbing baguettes or sandwich loaves on way to train station
* Customer service tasks:
  + Greet customers, answer questions about products
  + Explain baking process, ingredients, product differences (customer education)
  + Slice bread if requested (use electric slicer, ask "thick or thin?")
  + Package purchases (bread bag, sticker, optional twine for aesthetic)
  + Process payments (cash or card via Square Terminal)
* **Average transaction:** 1-3 loaves, $10-$25
* **Typical volume:** 8-12 customers during this hour (Tuesday-Friday), 15-20 on weekends
* **Restock display case:** As Marcus and David bring fresh loaves from BOH (baguettes cool fast, available by 7:30 AM)

**8:00 AM - 9:00 AM: Peak Morning Rush (60 min)**

* **Busiest hour of the day, especially weekends**
* **Customer profile:** Families, weekend breakfast shoppers
* Handle continuous line of customers:
  + Maintain friendly, patient demeanor even when busy
  + Multi-task: Ring up one customer while chatting with next in line
  + Quickly assess customer needs (regular vs. first-timer)
  + Suggest complementary products (e.g., "The Whole Grain pairs beautifully with our olive oil for dipping")
* **Tasting samples:** Set out small cubes of a daily focus bread (e.g., Seeded Multigrain) with small plates, encourage tasting
* **Restock frequently:** Display case can be depleted rapidly during rush
* **Average volume:** 20-30 customers this hour on weekends, 12-15 on weekdays
* **Wholesale customer pickup:** Handle Cedar Street Café pickup (see Marcus's schedule, 8:00-8:30 AM)
  + Customer arrives, Sarah retrieves pre-packed order from staging area
  + Process invoice payment (account on file, weekly billing)
  + Friendly interaction (these are regular wholesale partners, build relationship)

**9:00 AM - 10:00 AM: Mid-Morning Lull and Online Orders (60 min)**

* **Slower period:** Foot traffic drops after morning rush
* **Online order fulfillment:**
  + Check email and Square dashboard for online orders (placed via website)
  + Typical online orders: 2-5 per day
  + Process:
    - Pull ordered items from display or FOH holding
    - Package carefully (double-bag for protection)
    - Print packing slip, attach
    - Prepare for customer pickup (most orders are pickup, not delivery)
    - Send "ready for pickup" email notification
  + **Pickup window:** Most customers pick up between 10 AM - 4 PM
* **Social media posting:**
  + Take photos of fresh bread in display case (good lighting, attractive angles)
  + Post to Instagram: "Good morning! Today's lineup includes..." (tag products)
  + Engage with comments from previous posts
  + **Frequency:** 1-2 posts per day
* **Restock and organize:**
  + Arrange display case for visual appeal (reorganize as inventory shifts)
  + Check inventory levels, relay to Marcus if certain products are running low

**10:00 AM - 11:00 AM: Late Morning Steady Flow (60 min)**

* **Customer profile shifts:** More relaxed shoppers, locals, specialty food enthusiasts
* Continue customer service:
  + Engage in longer conversations (time allows)
  + Educate about sourdough process (customers often curious)
  + Build customer relationships (many regulars, know them by name)
* **Restocking:** David brings more cooled bread from BOH (steady supply through late morning)
* **FOH cleaning maintenance:**
  + Wipe down counter surfaces (crumbs accumulate)
  + Empty small trash bin near counter
  + Quick restroom check (tidy, restock paper)

**11:00 AM - 12:00 PM: Lunch Hour Uptick (60 min)**

* **Customer profile:** Lunch crowd, people buying sandwich loaves, focaccia
* **Increased sandwich loaf sales:** Many customers specifically seeking sliced bread for lunch
* Slice bread on demand (can be time-consuming if multiple customers request slicing)
* **Focaccia sales:** Popular for lunch, often bought with cheese from neighboring co-op
* **Average volume:** 10-15 customers this hour
* Continue online order pickups (customers often pick up during lunch break)

**12:00 PM - 12:30 PM: End of Shift / Handoff (30 min)**

* **Prepare for shift end:**
  + Count cash drawer:
    - Total cash in drawer
    - Subtract opening float ($150)
    - Calculate cash sales for shift
    - Compare to POS report (should match, flag discrepancies to Marcus)
  + Print daily sales report from Square:
    - Total sales (cash + card)
    - Number of transactions
    - Top-selling products
  + **Shift handoff notes:**
    - What sold well today?
    - What's running low?
    - Any customer feedback or special requests?
    - Any issues with equipment (POS, slicer, etc.)?
* **Quick FOH tidy:**
  + Wipe surfaces one more time
  + Ensure display case looks inviting for afternoon shift
* **Clock out: 12:30 PM** (6-hour shift, Tuesday-Saturday)
* **Sunday schedule:** Continue until 2:00 PM close (7.5-hour shift)

*Afternoon shift (12:30 PM - 6:00 PM Tuesday-Friday, 12:30 PM - 4:00 PM Saturday, 2:00 PM close Sunday) is covered by part-time staff not detailed here, or by David/Marcus in rotation.*

**3.3 Task Dependencies and Timing Constraints**

**CRITICAL PATH ANALYSIS:**

The production workflow has several hard constraints that create dependencies:

**1. Starter/Levain Dependency:**

* **Starter health** dictates all sourdough production
* If starter is weak: Entire sourdough schedule delays by 2-4 hours (or shifts to next day)
* Levain build timing: Must be started 6-8 hours before main dough mix
  + Example: Tomorrow's 6:00 AM sourdough mix requires levain built by 10:00 PM tonight
  + **Consequence of missed levain build:** No sourdough production next day, revenue loss of $800-1,200

**2. Oven as Bottleneck:**

* Oven capacity: 24-30 loaves per full load (3 decks)
* Bake time: 25-45 minutes per batch (product-dependent)
* Recovery time between bakes: 10-15 minutes (oven returns to temperature)
* **Maximum daily throughput:**
  + Available baking hours: 5:00 AM - 2:00 PM (9 hours)
  + Realistic bake cycles: 10-12 cycles per day
  + Maximum loaves: 240-300 per day (theoretical)
  + **Actual production:** 180-220 loaves per day (leaves buffer for issues, cooling time management)
* **Constraint:** Cannot increase production beyond oven capacity without second oven or extended hours

**3. Retarder Capacity Constraint:**

* Retarder holds 36 sheet pans, equivalent to ~180-200 loaves in bannetons
* **This caps the maximum number of sourdough loaves that can be cold-proofed overnight**
* If demand exceeds 200 loaves:
  + Option A: Add second retarder unit ($1,500-3,000 investment)
  + Option B: Stagger production (some loaves same-day proof, some overnight proof)
  + Option C: Decline orders (current strategy to maintain quality)

**4. Cooling Rack Capacity Constraint:**

* 4 cooling racks x 20 pans per rack = 80 pans total cooling capacity
* Each loaf needs 2-4 hours cooling before packaging
* **During peak production (Saturday):**
  + Morning bake (5:00 AM - 11:00 AM): 75 loaves produced
  + These loaves occupy all cooling racks until 1:00-3:00 PM
  + **Consequence:** Cannot start afternoon bake until racks clear (or purchase more racks)
* **Current mitigation:** Stagger baking to align with cooling/packaging rhythm

**5. Shaping Bench Time:**

* Primary shaping bench: 96"L x 30"D = 20 sq ft surface
* Can comfortably shape 8-10 loaves simultaneously (more if working in batches)
* **Afternoon shaping session (12:00-2:00 PM):** 95 loaves need shaping for next day
* With 2 people (Marcus + Rachel): ~60 loaves/hour shaped (pre-shape, rest, final shape)
* **Time requirement:** Minimum 90-120 minutes for full shaping session
* **Constraint:** Cannot compress this time significantly without sacrificing quality

**6. Customer Flow Timing:**

* **Morning rush (7:00-9:00 AM):** Display case must be stocked
* **Problem:** Many loaves still cooling during rush (just baked 5:00-7:00 AM)
* **Solution:** Use previous day's production for early morning stock, rotate in fresh bread as it cools
* **Weekend challenge:** Higher volume, tighter timing
  + Saturday rush begins at 7:00 AM, but peak production is 6:00-10:00 AM
  + **Mitigation:** Friday night prep (more loaves shaped, retarded for Saturday bake)

**4. PRODUCTION DETAILS**

**4.1 Complete Product Recipes with Baker's Percentages**

**PRODUCT #1: Classic Country Sourdough (Signature)**

**Baker's Percentages:**

* Bread Flour: 85%
* Whole Wheat Flour: 15%
* **Total Flour: 100%**
* Water: 75%
* Levain (100% hydration): 20%
* Salt: 2%
* **Total Dough: 197%**

**Batch Size for 50 Loaves:**

* Target loaf weight: 900g baked (1000g dough pre-bake, accounting for 10% moisture loss)
* Total dough needed: 50 kg

**Scaled Ingredients:**

* Bread Flour: 21.5 kg (85% of 25.3 kg total flour)
* Whole Wheat Flour: 3.8 kg (15%)
* **Total Flour: 25.3 kg**
* Water: 19.0 kg (75% of flour)
* Levain: 5.1 kg (20% of flour)
* Salt: 506g (2% of flour)
* **Total Dough: 50 kg**

**True Hydration Calculation:**

* Levain composition: 2.55 kg flour + 2.55 kg water (100% hydration)
* Final dough flour: 21.5 kg bread + 3.8 kg WW + 2.55 kg (from levain) = **27.85 kg total flour**
* Final dough water: 19.0 kg + 2.55 kg (from levain) = **21.55 kg total water**
* **True Hydration: 77.4%** (This is a moderately high-hydration dough, sticky but manageable)

**Mixing Process:**

1. **Autolyse:** Mix flour and water only, rest 45 minutes
2. **Add levain and salt:** Low speed 3 min, high speed 8 min
3. **Target DDT (Desired Dough Temperature):** 76-78°F

**Bulk Fermentation:**

* **Duration:** 4-5 hours at 76°F ambient
* **Stretch-and-fold schedule:** 4 folds at 0:45, 1:30, 2:15, 3:00 hours
* **Completion indicators:**
  + 75-100% volume increase
  + Domed surface
  + Visible bubbles throughout

**Shaping:**

* **Divide:** 1000g portions (yields 900g baked loaf)
* **Pre-shape:** Loose oval, 25-minute bench rest
* **Final shape:** Tight bâtard (oval), seam-side up in oval banneton

**Proofing:**

* **Cold retard:** 10-12 hours at 40°F, 85% RH in retarder

**Baking:**

* **Oven temp:** 500°F (preheat), then 480°F during bake (lower after steam phase)
* **Scoring:** Deep cross pattern (2 perpendicular cuts, 1/2" deep)
* **Steam:** 3-second burst + 8-second sustained injection, vents closed
* **Steam phase:** 15 minutes (vents closed)
* **Dry phase:** 23 minutes (vents open)
* **Total bake time:** 38 minutes
* **Target internal temp:** 208-210°F

**Cooling:**

* **Minimum:** 3 hours on wire rack before packaging

**Ingredient Cost per Loaf:**

* Bread flour: $2.04 (at $1.28/kg bulk)
* Whole wheat flour: $0.37 (at $1.87/kg organic)
* Water: $0.01 (negligible)
* Salt: $0.03
* Levain (flour + labor): $0.26
* **Total ingredient cost: $2.72 per loaf**

**Retail Price:** $9.00 per loaf  
**Wholesale Price:** $5.75 per loaf (36% markup for retailer)

**PRODUCT #2: Whole Grain Sourdough**

**Baker's Percentages:**

* Bread Flour: 60%
* Whole Wheat Flour: 30%
* Rye Flour: 10%
* **Total Flour: 100%**
* Water: 78%
* Levain (100% hydration): 22%
* Salt: 2%
* **Total Dough: 202%**

**Batch Size for 25 Loaves:**

* Target loaf weight: 900g baked (980g dough pre-bake)
* Total dough needed: 24.5 kg

**Scaled Ingredients:**

* Bread Flour: 7.3 kg
* Whole Wheat Flour: 3.65 kg
* Rye Flour: 1.22 kg
* **Total Flour: 12.17 kg**
* Water: 9.5 kg
* Levain: 2.68 kg
* Salt: 243g
* **Total Dough: 24.5 kg**

**True Hydration:** 80.5% (higher than Country due to whole grains absorbing more water)

**Mixing Process:**

* **Autolyse:** 60 minutes (longer for whole grains, softens bran)
* **Mix:** Low speed 3 min, high speed 9 min (whole grains need slightly longer development)
* **DDT:** 76-78°F

**Bulk Fermentation:**

* **Duration:** 4.5-5.5 hours (whole grains ferment slightly slower)
* **4 folds** at 45-minute intervals

**Shaping:**

* **Divide:** 980g portions
* **Pre-shape:** Round, 25-minute rest
* **Final shape:** Tight boule (round), seam-side up in round banneton

**Proofing:**

* **Cold retard:** 10-12 hours at 40°F

**Baking:**

* **Oven temp:** 490°F
* **Scoring:** Radial pattern (5 cuts from center, forming star)
* **Steam:** Same as Country Sourdough
* **Bake time:** 40 minutes (slightly longer due to denser crumb)
* **Internal temp:** 206-208°F

**Cooling:** 4 hours minimum (whole grains retain more moisture, need longer to set)

**Ingredient Cost per Loaf:**

* Bread flour: $1.50
* Whole wheat flour: $1.04
* Rye flour: $0.34
* Levain: $0.31
* Salt: $0.03
* **Total: $3.21 per loaf**

**Retail Price:** $9.50 per loaf  
**Wholesale Price:** $6.00 per loaf

**PRODUCT #3: Seeded Multigrain**

**Baker's Percentages:**

* Bread Flour: 75%
* Whole Wheat Flour: 25%
* **Total Flour: 100%**
* Water: 73%
* Levain: 20%
* Salt: 2%
* Seed Mix (sunflower, flax, sesame, toasted): 15%
* **Total Dough: 210%**

**Batch Size for 20 Loaves:**

* Target loaf weight: 850g baked (950g dough pre-bake)
* Total dough needed: 19 kg

**Scaled Ingredients:**

* Bread Flour: 6.75 kg
* Whole Wheat Flour: 2.25 kg
* **Total Flour: 9 kg**
* Water: 6.57 kg
* Levain: 1.8 kg
* Salt: 180g
* Seed Mix: 1.35 kg (pre-toasted, cooled)
* **Total Dough: 19 kg**

**True Hydration:** 75% (seeds add crunch but don't significantly absorb water during short mix)

**Seed Mix Preparation** (done in advance, stored in airtight container):

* Sunflower seeds: 45% of mix = 608g
* Golden flax seeds: 30% = 405g
* Sesame seeds: 25% = 337g
* **Toast seeds:** Spread on sheet pan, bake at 350°F for 8-10 minutes until fragrant and lightly colored
* Cool completely before adding to dough

**Mixing Process:**

* **Autolyse:** Flour + water, 40 minutes
* **Add levain, salt, and seed mix:** Low speed 3 min (incorporate), high speed 6 min
* **DDT:** 76-78°F

**Bulk Fermentation:**

* **Duration:** 4-5 hours
* **3 folds** (seeds add structure, fewer folds needed)

**Shaping:**

* **Divide:** 950g portions
* **Pre-shape:** Oval, 25-minute rest
* **Final shape:** Bâtard (oval)
* Place in oval banneton, **optionally roll top in additional seeds** before placing (creates seeded crust)

**Proofing:**

* **Cold retard:** 10-12 hours at 40°F

**Baking:**

* **Oven temp:** 490°F
* **Scoring:** Single long slash (seeds can make scoring challenging, keep simple)
* **Steam:** Standard
* **Bake time:** 38 minutes
* **Internal temp:** 208°F

**Cooling:** 3 hours

**Ingredient Cost per Loaf:**

* Bread flour: $1.38
* Whole wheat flour: $0.68
* Seeds (mixed): $1.45 (seeds are expensive per kg)
* Levain: $0.22
* Salt: $0.03
* **Total: $3.76 per loaf**

**Retail Price:** $10.00 per loaf (premium pricing due to seed cost)  
**Wholesale Price:** $6.50 per loaf

**PRODUCT #4: Classic Baguette (Poolish Method)**

**Baker's Percentages (Final Dough):**

* Bread Flour: 100%
* **Total Flour: 100%**
* Water: 70%
* Poolish: 40% (of total flour weight - poolish itself is 100% hydration)
* Instant Yeast: 0.3% (in final dough - poolish already has yeast)
* Salt: 2%
* Malt Powder: 0.5% (enhances crust color and flavor)
* **Total Dough: 172.8%**

**Poolish (prepared 12-14 hours before final mix):**

* Flour: 40% of total flour (e.g., if final recipe uses 5 kg flour, poolish uses 2 kg)
* Water: Equal to poolish flour (2 kg)
* Instant Yeast: 0.1% of poolish flour (2g for 2 kg flour)
* **Fermentation:** 12-14 hours at 68-70°F until bubbly, domed, fragrant

**Batch Size for 40 Baguettes:**

* Target baguette weight: 300g baked (325g dough pre-bake)
* Total dough needed: 13 kg

**Poolish (Mixed Previous Day at 4:00 PM):**

* Bread Flour: 2.08 kg (40% of 5.2 kg total flour)
* Water: 2.08 kg
* Instant Yeast: 2g
* **Mix, cover, ferment at room temp overnight**

**Final Dough (Mixed at 5:00 AM Day of Bake):**

* Bread Flour: 3.12 kg (remaining 60% of flour)
* **Total Flour: 5.2 kg** (including poolish flour)
* Water: 1.56 kg (total water will be 3.64 kg = 70% of flour)
* Poolish: 4.18 kg (all of it)
* Instant Yeast: 16g (0.3% of flour - small amount, poolish provides most fermentation power)
* Salt: 104g (2%)
* Malt Powder: 26g (0.5%)
* **Total Dough: 13 kg**

**True Hydration:** 70% (moderately wet, but less than sourdough - baguettes need structure for shaping)

**Mixing Process:**

* **No autolyse** (poolish already provides enzyme activity)
* Combine poolish, water, flour in mixer
* Low speed 3 min (incorporate)
* Rest 10 minutes (short rest)
* Add salt, yeast, malt
* Low speed 2 min, high speed 8 min
* **DDT:** 76-78°F

**Bulk Fermentation:**

* **Duration:** 90 minutes at room temp
* **2 folds** at 30 and 60 minutes

**Shaping:**

* **Divide:** 325g portions (40 pieces)
* **Pre-shape:** Small cylinders, 20-minute bench rest
* **Final shape:** Classic baguette taper
  + Flatten into rectangle, fold top 1/3 down, seal
  + Fold in half, seal seam
  + Roll from center outwards, gentle pressure, taper ends
  + Target length: 14-16 inches
* **Proof on couche:** Seam-side up, linen pleated between each baguette
* **Final proof:** 60-75 minutes at room temp (until puffy, poke test slow spring-back)

**Baking (Same Day Production - No Retarding):**

* **Oven temp:** 480°F
* **Scoring:** Single diagonal slash down length, 1/4" deep, 30-degree angle (classic baguette score)
* **Steam:** Heavy injection (3-second burst + 10-second sustained - baguettes need lots of steam)
* **Bake time:** 22-25 minutes
* **Target:** Deep golden-brown crust, crackly surface texture
* **Internal temp:** 205-207°F

**Cooling:** 30-45 minutes (baguettes cool quickly due to high surface area, thin shape)

**Ingredient Cost per Baguette:**

* Bread flour: $0.66
* Water: negligible
* Yeast: $0.03
* Salt: $0.02
* Malt: $0.02
* **Total: $0.73 per baguette**

**Retail Price:** $4.00 per baguette  
**Wholesale Price:** $2.60 per baguette

**Production Notes:**

* Baguettes are most delicate product - require skilled, gentle shaping
* Must be baked same day (no retarding) for optimal crust and texture
* Peak quality window: 4-8 hours after baking (crust softens after that)
* Rachel handles 100% of baguette shaping due to skill requirement

**PRODUCT #5: Rustic Ciabatta (Biga Method)**

**Baker's Percentages:**

* Bread Flour (high-protein, 12.7%+): 100%
* **Total Flour: 100%**
* Water: 85%
* Biga (stiff preferment): 30% (of total flour weight)
* Salt: 2%
* Olive Oil: 10%
* Instant Yeast: 0.2% (in final dough)
* **Total Dough: 197.2%**

**Biga (prepared 12-16 hours before final mix):**

* Flour: 30% of total flour (1.8 kg for batch below)
* Water: 50% of biga flour (900g - this is a STIFF preferment, 50% hydration)
* Instant Yeast: 0.1% of biga flour (2g)
* **Mix to stiff dough, cover, ferment 12-16 hours at 65-68°F or refrigerate**

**Batch Size for 15 Loaves:**

* Target loaf weight: 600g baked (650g dough pre-bake)
* Total dough needed: 9.75 kg

**Biga (Mixed Previous Day at 4:00 PM):**

* Bread Flour: 1.8 kg
* Water: 900g (50% hydration)
* Instant Yeast: 2g
* **Mix to stiff, shaggy dough; cover; cold ferment overnight in walk-in**

**Final Dough:**

* Bread Flour: 4.2 kg (remaining 70%)
* **Total Flour: 6 kg** (including biga flour)
* Water: 4.2 kg (total water will be 5.1 kg = 85% of flour)
* Biga: 2.7 kg (all of it)
* Salt: 120g (2%)
* Olive Oil: 600g (10%)
* Instant Yeast: 12g (0.2%)
* **Total Dough: 9.75 kg**

**True Hydration:** 85% (VERY high - this is a wet, sticky, slack dough)

**Mixing Process:**

* Add biga (torn into small pieces), most water, flour, salt, yeast to mixer
* Low speed 3 min (rough incorporation)
* **Bassinage technique:** Slowly stream in remaining water and olive oil while mixer runs on low (5 min)
* High speed 5 min (dough becomes glossy, sticky, pulls from bowl but still very slack)
* **DDT:** 76-78°F

**Bulk Fermentation:**

* **Duration:** 3 hours at 78°F
* **4 stretch-and-folds** with heavily oiled hands at 45-minute intervals
* Dough will become billowy, full of large bubbles (this is desired - open crumb structure)

**Shaping:**

* **NO INTENSIVE SHAPING** - ciabatta is "coaxed" not shaped
* Turn dough onto heavily floured surface (generous flour, 1/4" layer)
* Cut with bench scraper into 15 pieces (650g each)
* Gently stretch each piece into rough rectangular "slipper" shape
* Minimal handling (preserve gas bubbles)
* Place on parchment-lined sheet pans, 3 per pan
* **Final proof:** 30-45 minutes at room temp (short proof, dough already well-fermented)

**Baking:**

* **Oven temp:** 480°F
* **No scoring** (irregular cracks will form naturally during bake)
* **Steam:** Heavy injection
* **Bake time:** 28-30 minutes
* **Target:** Golden crust, irregular shape, large holes visible in crumb
* **Internal temp:** 205-207°F

**Cooling:** 90 minutes minimum

**Ingredient Cost per Loaf:**

* Bread flour (high-protein): $1.02 (premium flour, $1.70/kg)
* Water: negligible
* Olive oil: $0.82 (olive oil is expensive, $13.60/liter bulk)
* Yeast: $0.02
* Salt: $0.03
* **Total: $1.89 per loaf**

**Retail Price:** $7.50 per loaf  
**Wholesale Price:** $4.90 per loaf

**Production Notes:**

* Most technically challenging bread (very high hydration, delicate handling)
* David typically manages ciabatta production under Marcus's supervision
* Can only produce if high-protein flour in stock (regular bread flour will not hold 85% hydration properly)

**PRODUCT #6: Whole Wheat Sandwich Loaf**

**Baker's Percentages:**

* Whole Wheat Flour: 50%
* Bread Flour: 50%
* **Total Flour: 100%**
* Water (or milk): 70%
* Instant Yeast: 1.1%
* Salt: 2%
* Unsalted Butter (softened): 14%
* Brown Sugar: 15%
* **Total Dough: 202.1%**

**Batch Size for 20 Loaves:**

* Target loaf weight: 850g baked (920g dough pre-bake)
* Total dough needed: 18.4 kg

**Scaled Ingredients:**

* Whole Wheat Flour: 4.55 kg
* Bread Flour: 4.55 kg
* **Total Flour: 9.1 kg**
* Whole Milk (warmed to 85°F): 6.37 kg
* Instant Yeast: 100g
* Salt: 182g
* Unsalted Butter (softened): 1.27 kg
* Brown Sugar: 1.37 kg
* **Total Dough: 18.4 kg**

**True Hydration:** 70% (milk replaces water, similar hydration)

**Mixing Process:**

* **Autolyse:** Flour + milk, 45 minutes (critical for whole wheat, softens bran)
* Add yeast, salt, sugar, butter
* Low speed 4 min (incorporate)
* High speed 8 min (develop strong gluten network - enriched dough needs more mixing)
* **DDT:** 78°F (slightly warmer than lean doughs)

**Bulk Fermentation:**

* **Duration:** 60-90 minutes at 78-80°F (commercial yeast is faster than sourdough)
* **1 fold** at 45 minutes (optional)
* **Completion:** Doubled in volume

**Shaping:**

* **Divide:** 920g portions
* **Pre-shape:** Press into rectangle, rough roll, 15-minute rest
* **Final shape:** Tight log for pan
  + Flatten into 9"x12" rectangle
  + Roll tightly from short side (like cinnamon roll)
  + Pinch seam and ends to seal
  + Place seam-side down in greased 9"x5" loaf pan
* **Final proof:** 60-90 minutes at 78°F
* **Ready indicator:** Dough domes 1-1.5 inches above pan rim

**Baking:**

* **Oven temp:** 360°F (lower than hearth breads - enriched doughs burn easily)
* **No steam** (enriched breads don't need steam)
* **Optional:** Brush top with melted butter or egg wash before baking (for shiny crust)
* **Bake time:** 35-38 minutes
* **Internal temp:** 200-205°F

**Cooling:**

* **Remove from pan immediately** (prevents soggy bottom)
* Cool on rack 3-4 hours before slicing

**Ingredient Cost per Loaf:**

* Whole wheat flour: $1.33 (organic, $1.87/kg)
* Bread flour: $0.94
* Milk: $0.82 (commercial, bulk)
* Butter: $1.62 (butter is expensive)
* Brown sugar: $0.51
* Yeast: $0.05
* Salt: $0.03
* **Total: $5.29 per loaf** (highest ingredient cost due to dairy and butter)

**Retail Price:** $8.50 per loaf (competitive with supermarket artisan sandwich bread)  
**Wholesale Price:** $5.50 per loaf

**Production Notes:**

* Most "mainstream" product (appeals to families, sandwich makers)
* Stores better than sourdough (3-4 days vs. 2-3 days)
* Often requested pre-sliced
* Marcus oversees this production personally (enriched doughs require different technique)

**PRODUCT #7: Olive & Rosemary Sourdough**

**Baker's Percentages:**

* Bread Flour: 90%
* Whole Wheat Flour: 10%
* **Total Flour: 100%**
* Water: 75%
* Levain: 20%
* Salt: 2%
* Kalamata Olives (pitted, chopped, drained): 12%
* Fresh Rosemary (chopped): 1.5%
* **Total Dough: 210.5%**

**Batch Size for 15 Loaves (Wed/Fri/Sat Production):**

* Target loaf weight: 900g baked (1000g dough pre-bake)
* Total dough needed: 15 kg

**Scaled Ingredients:**

* Bread Flour: 6.4 kg
* Whole Wheat Flour: 710g
* **Total Flour: 7.11 kg**
* Water: 5.33 kg
* Levain: 1.42 kg
* Salt: 142g
* Kalamata Olives: 853g (pre-chopped, drained, patted dry)
* Fresh Rosemary: 107g (stripped from stems, chopped)
* **Total Dough: 15 kg**

**True Hydration:** 77.4% (same as Country Sourdough base)

**Olive Preparation** (done 1 hour before mixing):

* Drain olives thoroughly (excess brine will affect dough hydration)
* Pat dry with paper towels
* Chop roughly (quarter or halve each olive)
* Set aside at room temperature

**Mixing Process:**

* **Autolyse:** Flour + water, 40 minutes
* Add levain and salt
* Low speed 3 min, high speed 6 min (slightly shorter mix)
* **Add olives and rosemary** in final 1 minute of mixing (gentle incorporation)
* **DDT:** 76-78°F

**Bulk Fermentation:**

* **Duration:** 4-5 hours
* **3 folds** (fewer folds to avoid smashing olives)

**Shaping:**

* **Divide:** 1000g portions
* **Pre-shape:** Round (olives distributed throughout), 25-minute rest
* **Final shape:** Boule (round)
* Place in round banneton

**Proofing:**

* **Cold retard:** 10-12 hours at 40°F

**Baking:**

* **Oven temp:** 490°F
* **Scoring:** Cross pattern or decorative cuts
* **Steam:** Standard
* **Bake time:** 38-40 minutes (olives add moisture, may need extra time)
* **Internal temp:** 208°F

**Cooling:** 3 hours

**Ingredient Cost per Loaf:**

* Bread flour: $1.31
* Whole wheat flour: $0.20
* Olives: $1.62 (expensive ingredient, $10.20/kg bulk)
* Fresh rosemary: $0.43 (seasonal pricing variation)
* Levain: $0.19
* Salt: $0.03
* **Total: $3.77 per loaf**

**Retail Price:** $10.50 per loaf (specialty pricing)  
**Wholesale Price:** $6.75 per loaf

**Production Notes:**

* Produced 3x/week only (Wed/Fri/Sat) - limited availability creates demand
* Olives can interfere with gluten development if over-mixed
* Customers either love or avoid this bread (polarizing due to olives)
* David typically manages this production

**PRODUCT #8: Rye Sourdough (40% Rye)**

**Baker's Percentages:**

* Bread Flour: 60%
* Rye Flour: 40%
* **Total Flour: 100%**
* Water: 80%
* Levain (rye-based, 100% hydration): 25%
* Salt: 2%
* Caraway Seeds (optional): 2%
* **Total Dough: 209%**

**Batch Size for 12 Loaves (Thu/Sat Production):**

* Target loaf weight: 900g baked (1000g dough pre-bake)
* Total dough needed: 12 kg

**Scaled Ingredients:**

* Bread Flour: 3.44 kg
* Rye Flour: 2.29 kg
* **Total Flour: 5.73 kg**
* Water: 4.58 kg
* Rye Levain: 1.43 kg
* Salt: 115g
* Caraway Seeds (toasted): 115g (optional, customer preference)
* **Total Dough: 12 kg**

**True Hydration:** 82.5% (high hydration - rye absorbs lots of water but has weak gluten)

**Special Note on Rye:**

* Rye flour has very weak gluten, high pentosan content (gums that bind water)
* Dough will be sticky, dense, and NOT elastic like wheat doughs
* Requires gentle handling, cannot be over-mixed or over-shaped

**Mixing Process:**

* **NO autolyse** (rye enzymatic activity is very fast, can degrade dough)
* Mix all ingredients together immediately
* Low speed 2 min, high speed 3 min (MINIMAL mixing - over-mixing activates too many enzymes)
* **DDT:** 76°F

**Bulk Fermentation:**

* **Duration:** 3-4 hours (shorter than wheat sourdoughs)
* **2 gentle folds** (rye dough is fragile)
* **Completion:** Slight volume increase (NOT the dramatic rise of wheat doughs)

**Shaping:**

* **Divide:** 1000g portions
* **Pre-shape:** Very gentle round, 20-minute rest
* **Final shape:** Gentle boule (do NOT create tight skin - rye dough will tear)
* Place in heavily floured round banneton

**Proofing:**

* **Cold retard:** 8-10 hours at 40°F (shorter than wheat - over-proofing causes collapse)

**Baking:**

* **Oven temp:** 475°F (slightly lower - rye burns easily)
* **Scoring:** Simple cross or single slash (rye doesn't "open" scores like wheat)
* **Steam:** Heavy steam (rye crust benefits from moisture)
* **Bake time:** 45-50 minutes (longer - dense crumb needs time to bake through)
* **Internal temp:** 205-207°F

**Cooling:**

* **CRITICAL:** 6-8 hours minimum, ideally 12-24 hours
* Rye has high moisture content and pentosans continue to set during cooling
* Slicing too early = gummy, under-set crumb (common mistake)

**Ingredient Cost per Loaf:**

* Bread flour: $0.88
* Rye flour: $1.56 (rye is expensive, specialty flour)
* Levain: $0.24
* Caraway: $0.26
* Salt: $0.03
* **Total: $2.98 per loaf**

**Retail Price:** $9.75 per loaf  
**Wholesale Price:** $6.25 per loaf

**Production Notes:**

* Most challenging bread technically (rye behavior very different from wheat)
* Marcus handles 100% of rye production (requires experience)
* Long cooling time creates scheduling challenge
* Limited production (Thu/Sat only) due to complexity
* Some customers specifically seek rye for health benefits (lower glycemic index)

**PRODUCT #9: Rosemary Focaccia**

**Baker's Percentages:**

* Bread Flour: 100%
* **Total Flour: 100%**
* Water: 85%
* Instant Yeast: 1%
* Salt: 2%
* Olive Oil (in dough): 4%
* Levain (optional flavor boost): 16%
* **Topping:** Additional olive oil, flaky sea salt, fresh rosemary
* **Total Dough: 208%**

**Batch Size for 4 Sheets (Tue/Thu/Sat):**

* Each sheet: ~1200g dough (yields 6 portions when cut)
* Total dough: 4.8 kg

**Scaled Ingredients:**

* Bread Flour: 2.3 kg
* Water: 1.96 kg at 75°F
* Instant Yeast: 23g
* Salt: 46g
* Olive Oil (in dough): 92g
* Levain: 368g
* **Total Dough: 4.8 kg**

**True Hydration:** 87% (including levain water - very wet, slack dough)

**Mixing Process:**

* Combine all ingredients (no autolyse needed)
* Low speed 3 min
* Rest 15 min
* Add olive oil
* Low speed 2 min, high speed 4 min (dough becomes glossy, sticky)
* **DDT:** 76°F

**Fermentation Options:**

* **Option A (Same-Day):** 2-3 hours bulk at room temp with 3 folds
* **Option B (Cold Ferment - PREFERRED):** Immediately to walk-in cooler, 12-24 hours cold bulk fermentation
  + This develops better flavor, creates schedule flexibility

**Shaping:**

* Coat 9"x13" sheet pans (or half-sheet pans) generously with olive oil (3-4 tablespoons per pan)
* Divide dough into 4 portions (1200g each)
* Place one portion in each oiled pan
* With oiled hands, gently press and stretch dough toward edges of pan
* **If dough resists:** Cover, rest 20-30 minutes, stretch again
* Repeat until dough covers pan evenly
* Cover pans, allow final proof

**Final Proof:**

* **Duration:** 1.5-3 hours at room temp (until puffy, airy, nearly doubled)
* **Depends on:** Dough temperature (cold-fermented dough takes longer)

**Pre-Bake Topping:**

* Drizzle surface generously with olive oil (2-3 tablespoons per sheet)
* **Dimpling:** Press fingertips firmly down through dough to pan bottom (creates characteristic dimples)
  + This redistributes gas, prevents giant bubbles
* Sprinkle with flaky sea salt (e.g., Maldon) - generous pinch
* Press fresh rosemary sprigs into dough (decorative and aromatic)

**Baking:**

* **Oven temp:** 450°F
* **No steam** (focaccia is baked in oiled pan, creates its own steam)
* **Bake time:** 20-25 minutes
* **Target:** Golden-brown top and bottom, crispy edges, soft center
* **Internal temp:** Not critical (visual assessment primary)

**Cooling:**

* Cool in pan 10 minutes
* Remove from pan (loosen edges with spatula)
* Cool on rack 30 minutes
* **Cut into 6 pieces per sheet** (typically 4"x5" rectangles)

**Ingredient Cost per Sheet (6 portions):**

* Bread flour: $0.48
* Water: negligible
* Olive oil (dough + topping): $0.60 (generous oil use)
* Yeast: $0.02
* Salt + flaky salt: $0.09
* Fresh rosemary: $0.26
* Levain: $0.07
* **Total per sheet: $1.50**
* **Cost per portion (1/6 sheet): $0.26**

**Retail Price:** $4.50 per portion (1/6 sheet)  
**Wholesale Price:** $3.00 per portion

**Production Notes:**

* Focaccia is highest-margin product (low cost, premium pricing)
* Very popular for lunch crowd
* David handles focaccia production exclusively
* Can be topped with variations (grape & thyme in fall, cherry tomato in summer)
* Stores well (2 days), can be reheated

**PRODUCT #10: Seasonal Sweet Focaccia**

**Base Recipe:** Same as Rosemary Focaccia (above)

**Topping Variations by Season:**

**Fall (Sept-Nov): Grape & Thyme**

* Red grapes (halved): 300g per sheet
* Fresh thyme: 20g
* Honey (drizzle): 30g
* Flaky salt

**Late Summer (Jul-Aug): Fig & Honey**

* Fresh figs (quartered): 8-10 figs per sheet
* Honey (drizzle): 40g
* Fresh thyme or rosemary
* Flaky salt

**Winter (Dec-Feb): Caramelized Onion & Thyme**

* Caramelized onions: 200g per sheet (pre-cooked)
* Fresh thyme: 15g
* Cracked black pepper

**Spring (Mar-May): Asparagus & Lemon**

* Asparagus tips (blanched): 150g per sheet
* Lemon zest: 1 lemon per sheet
* Flaky salt

**Process:**

* Same as Rosemary Focaccia
* Add toppings after dimpling, before baking
* For fruit toppings: Press into dough surface (they sink slightly during bake)

**Ingredient Cost:** $2.04-3.06 per sheet (seasonal fruit is expensive)  
**Cost per portion:** $0.34-0.51

**Retail Price:** $5.00-5.50 per portion (premium for seasonal specialty)  
**Wholesale Price:** $3.25-3.50 per portion

**Production Notes:**

* Produced 3x/week (Wed/Fri/Sun)
* Marketed heavily on Instagram (visually appealing)
* Creates excitement, drives foot traffic
* Some customers visit specifically for seasonal focaccia

**4.2 Daily Production Quantities by Day**

**TUESDAY (Typical Weekday):**

* Country Sourdough: 50 loaves
* Whole Grain Sourdough: 25 loaves
* Seeded Multigrain: 20 loaves
* Baguettes: 40
* Ciabatta: 15 loaves
* Whole Wheat Sandwich: 20 loaves
* Rosemary Focaccia: 4 sheets (24 portions)
* **TOTAL: 170 loaves + 40 baguettes + 24 focaccia portions**

**WEDNESDAY:**

* Country Sourdough: 50 loaves
* Whole Grain Sourdough: 25 loaves
* Seeded Multigrain: 20 loaves
* Baguettes: 40
* Ciabatta: 15 loaves
* Whole Wheat Sandwich: 20 loaves
* Olive & Rosemary: 15 loaves
* Seasonal Sweet Focaccia: 3 sheets (18 portions)
* **TOTAL: 185 loaves + 40 baguettes + 18 focaccia portions**

**THURSDAY:**

* Country Sourdough: 50 loaves
* Whole Grain Sourdough: 25 loaves
* Seeded Multigrain: 20 loaves
* Baguettes: 40
* Ciabatta: 15 loaves
* Whole Wheat Sandwich: 20 loaves
* Rye Sourdough (40%): 12 loaves
* Rosemary Focaccia: 4 sheets (24 portions)
* **TOTAL: 182 loaves + 40 baguettes + 24 focaccia portions**

**FRIDAY:**

* Country Sourdough: 55 loaves (pre-weekend bump)
* Whole Grain Sourdough: 28 loaves
* Seeded Multigrain: 22 loaves
* Baguettes: 45
* Ciabatta: 18 loaves
* Whole Wheat Sandwich: 25 loaves
* Olive & Rosemary: 15 loaves
* Seasonal Sweet Focaccia: 3 sheets (18 portions)
* **TOTAL: 203 loaves + 45 baguettes + 18 focaccia portions**

**SATURDAY (Peak Day):**

* Country Sourdough: 75 loaves
* Whole Grain Sourdough: 35 loaves
* Seeded Multigrain: 30 loaves
* Baguettes: 50
* Ciabatta: 20 loaves
* Whole Wheat Sandwich: 30 loaves
* Olive & Rosemary: 18 loaves
* Rye Sourdough: 12 loaves
* Rosemary Focaccia: 5 sheets (30 portions)
* **TOTAL: 250 loaves + 50 baguettes + 30 focaccia portions**

**SUNDAY:**

* Country Sourdough: 60 loaves
* Whole Grain Sourdough: 30 loaves
* Seeded Multigrain: 25 loaves
* Baguettes: 40
* Ciabatta: 20 loaves
* Whole Wheat Sandwich: 25 loaves
* Seasonal Sweet Focaccia: 3 sheets (18 portions)
* **TOTAL: 200 loaves + 40 baguettes + 18 focaccia portions**

**WEEKLY TOTALS:**

* **Total Bread Loaves:** 1,190 loaves/week
* **Total Baguettes:** 255/week
* **Total Focaccia:** 132 portions/week

**MONTHLY PRODUCTION (4-week month):**

* **Loaves:** 4,760/month
* **Baguettes:** 1,020/month
* **Focaccia:** 528 portions/month

**4.3 Oven Scheduling and Capacity Management**

**OVEN SPECIFICATIONS RECAP:**

* 3 decks, each holds 8-10 loaves (depending on size)
* Full oven capacity: 24-30 loaves per bake cycle
* Bake times: 22-50 minutes (product-dependent)
* Recovery time between bakes: 10-15 minutes

**TYPICAL SATURDAY OVEN SCHEDULE** (Peak Day Example):

**4:00 AM:** Oven preheat begins (target 500°F, takes 60-75 minutes)

**5:00 AM - 5:45 AM:** BAKE #1

* Load: 24 Country Sourdough loaves (8 per deck)
* Temp: 500°F initial, drop to 480°F
* Steam: Heavy
* Time: 38 minutes
* Unload: 5:38 AM
* **Recovery:** 10 minutes

**5:50 AM - 6:30 AM:** BAKE #2

* Load: 24 Country Sourdough loaves (second batch)
* Same parameters
* Unload: 6:28 AM
* **Recovery:** 10 minutes

**6:40 AM - 7:25 AM:** BAKE #3

* Load: 27 Country Sourdough loaves (final batch - 9 per deck, smaller loaves fit more)
* Same parameters
* Time: 40 minutes (fuller load = longer bake)
* Unload: 7:20 AM
* **ALL 75 Country Sourdough loaves complete by 7:25 AM**
* **Recovery:** 15 minutes

**7:40 AM - 8:25 AM:** BAKE #4

* Load: 18 Whole Grain Sourdough (6 per deck)
* Temp: 490°F
* Steam: Heavy
* Time: 40 minutes
* Unload: 8:20 AM
* **Recovery:** 10 minutes

**8:35 AM - 9:15 AM:** BAKE #5

* Load: 17 Whole Grain Sourdough (remaining batch, 6+6+5)
* Same parameters
* Unload: 9:15 AM
* **ALL 35 Whole Grain complete**
* **Recovery:** 10 minutes

**9:25 AM - 10:05 AM:** BAKE #6

* Load: 24 Baguettes (8 per deck, staggered arrangement)
* Temp: 480°F
* Steam: Very heavy
* Time: 23 minutes
* Unload: 9:48 AM
* **Recovery:** 10 minutes

**10:00 AM - 10:23 AM:** BAKE #7

* Load: 26 Baguettes (remaining batch)
* Same parameters
* Unload: 10:23 AM
* **ALL 50 baguettes complete**
* **Temperature adjustment:** Lower to 360°F for sandwich loaves (takes 15 min)

**10:40 AM - 11:20 AM:** BAKE #8

* Load: 30 Whole Wheat Sandwich loaves in pans (10 per deck)
* Temp: 360°F
* No steam
* Time: 38 minutes
* Unload: 11:18 AM
* **ALL sandwich loaves complete**
* **Temperature adjustment:** Raise back to 480°F (takes 12 min)

**11:35 AM - 12:05 PM:** BAKE #9

* Load: 15 Seeded Multigrain (5 per deck)
* Temp: 490°F
* Steam: Standard
* Time: 38 minutes
* Unload: 12:13 PM
* **Recovery:** 10 minutes

**12:25 PM - 1:05 PM:** BAKE #10

* Load: 15 Seeded Multigrain (remaining)
* Same parameters
* Unload: 1:03 PM
* **ALL 30 Multigrain complete**
* **Recovery:** 10 minutes

**1:15 PM - 1:55 PM:** BAKE #11

* Load: 20 Ciabatta (6+7+7 per deck - irregular shapes)
* Temp: 480°F
* Steam: Heavy
* Time: 30 minutes
* Unload: 1:45 PM
* **ALL ciabatta complete**
* **Recovery:** 10 minutes

**2:00 PM - 2:40 PM:** BAKE #12

* Load: 18 Olive & Rosemary (6 per deck)
* Temp: 490°F
* Steam: Standard
* Time: 38 minutes
* Unload: 2:38 PM
* **Recovery:** 10 minutes

**2:50 PM - 3:40 PM:** BAKE #13

* Load: 12 Rye Sourdough (4 per deck)
* Temp: 475°F
* Steam: Heavy
* Time: 48 minutes
* Unload: 3:38 PM
* **ALL rye complete**
* **Temperature adjustment:** Down to 450°F for focaccia

**3:55 PM - 4:20 PM:** BAKE #14 (FINAL)

* Load: 5 focaccia sheets (2 on deck 1, 2 on deck 2, 1 on deck 3 - in sheet pans)
* Temp: 450°F
* No steam
* Time: 23 minutes
* Unload: 4:18 PM
* **ALL focaccia complete**

**4:20 PM:** Oven turned off, production complete

**SATURDAY SUMMARY:**

* **Total bake cycles:** 14
* **Total oven time:** 11 hours 20 minutes (5:00 AM - 4:20 PM)
* **Total loaves baked:** 250 loaves + 50 baguettes + 30 focaccia portions
* **Oven at 95% capacity** (pushing limits of daily throughput)

**BOTTLENECK NOTES:**

* **Saturday is at maximum oven capacity**
* Cannot increase Saturday production without:
  + Starting earlier (4:00 AM preheat = 3:00 AM staff arrival - not feasible)
  + Adding 4th oven deck (capital investment + space)
  + Operating on Sunday later hours (lifestyle constraint for Marcus)
* **Weekday oven utilization: 60-70%** (room for growth mid-week)

**4.4 Ingredient Consumption Rates**

**FLOUR CONSUMPTION** (Primary ingredient):

**Weekly Flour Usage:**

* Bread Flour: ~520 kg/week
* Whole Wheat Flour: ~85 kg/week
* Rye Flour: ~18 kg/week
* **TOTAL: ~623 kg/week** (1,373 lbs/week)

**Monthly Flour Usage:**

* Bread Flour: ~2,080 kg/month (4,586 lbs)
* Whole Wheat Flour: ~340 kg/month (750 lbs)
* Rye Flour: ~72 kg/month (159 lbs)
* **TOTAL: ~2,492 kg/month** (5,495 lbs)

**Flour Storage and Ordering:**

* Flour stored in walk-in cooler (extends shelf life, prevents pests)
* Storage capacity: ~800 kg (10 x 50-kg bags in rotation)
* **Ordering frequency:** Weekly delivery from distributor (Tuesday deliveries)
* Order size: 600-650 kg/week (12-13 x 50-kg bags)

**OTHER MAJOR INGREDIENTS** (Monthly):

**Salt:**

* Usage: ~50 kg/month (2% of flour weight)
* Ordered: 50-kg bags, monthly delivery
* Storage: Dry storage room, sealed container

**Water:**

* Usage: ~1,850 kg/month (1,850 liters = 489 gallons)
* Source: Municipal water, filtered at mixing station
* Cost: Included in utilities (~$0.003/liter)

**Levain/Starter Maintenance:**

* Daily starter discard: 200g/day x 6 days = 1.2 kg/week = 4.8 kg/month (flour + water)
* **This represents ~$5/month in ingredient cost for starter maintenance**

**Yeast** (Commercial Instant Dry):

* Used in: Baguettes, Sandwich Loaves, Ciabatta, Focaccia
* Usage: ~2.5 kg/month
* Ordered: 1-kg vacuum-sealed bags, quarterly order
* Cost: ~$37.40/kg (specialty baker's yeast)
* Storage: Refrigerated after opening (maintains potency)

**Dairy:**

* Whole Milk (for sandwich loaves): ~160 liters/month
* Butter (for sandwich loaves): ~33 kg/month
* Ordered: Weekly delivery from local dairy distributor
* Storage: Reach-in refrigerator
* Cost: Milk $2.55/liter, Butter $12.75/kg (wholesale)

**Olive Oil:**

* Used in: Ciabatta, Focaccia
* Usage: ~35 liters/month
* Ordered: 5-liter tins, monthly
* Cost: ~$13.60/liter (bulk commercial EVOO, not premium)

**Specialty Ingredients:**

* Kalamata Olives: ~20 kg/month
* Fresh Rosemary: ~2.5 kg/month (local farm, seasonal pricing)
* Seeds (sunflower, flax, sesame): ~8 kg/month (mixed)
* Fresh seasonal produce (grapes, figs, etc.): Variable, ~$150/month budget

**TOTAL MONTHLY INGREDIENT COST SUMMARY:**

* Flour (all types): $3,480 (average $1.49/kg blended rate)
* Salt: $40
* Yeast: $88
* Dairy (milk + butter): $780
* Olive Oil: $448
* Specialty ingredients (olives, seeds, rosemary, etc.): $608
* **TOTAL: ~$5,444/month** (Cost of Goods Sold for ingredients only)

**Note:** This represents COGS of approximately 14.6% of gross revenue (see Financials section for revenue)

**Achieving 18% COGS - Strategic Sourcing Advantages:**

Parkside’s below-average COGS (18% vs. industry benchmark of 25-35%) results from several strategic advantages:

1. **Long-term supplier relationships:** Marcus’s 15 years in the industry have enabled him to negotiate locked-in wholesale pricing approximately 20% below typical market rates through multi-year contracts and volume commitments with regional distributors.
2. **Strategic ingredient blend:** The 60/40 organic/conventional flour blend balances premium positioning with cost management. Organic flour is reserved for flagship sourdough products where customers notice and value it most, while conventional flour is used in enriched breads and focaccia where other flavors dominate.
3. **High-margin product mix optimization:** Focaccia represents approximately 15% of total production volume but contributes disproportionately to gross margin (94% gross margin per portion). This strategic product mix pulls the blended average COGS downward.
4. **Minimal ingredient waste:** Precise production planning based on 2.5 years of sales data keeps ingredient spoilage under 2%, compared to the industry average of 5-8%. Every gram of flour is either baked into product or intentionally used in levain maintenance.
5. **Direct relationships with local producers:** Fresh rosemary, seasonal fruit, and some dairy come directly from local farms at wholesale prices, eliminating distributor markup (typically 15-25%).

These factors combine to create a sustainable cost advantage that, while exceptional, is achievable for an experienced owner-operator with strong industry connections and disciplined operations.

**5. FINANCIALS**

**5.1 Complete Ingredient Costs (Detailed)**

**FLOUR COSTS** (Bulk Wholesale Pricing):

* Bread Flour (Conventional, high-protein): $1.19/kg ($54.00 per 50-lb bag)
* Bread Flour (Organic): $1.79/kg ($81.00 per 50-lb bag)
* Whole Wheat Flour (Organic): $1.87/kg
* Rye Flour: $2.21/kg (specialty flour, limited suppliers)
* **Blended average flour cost:** $1.49/kg (60% organic, 40% conventional strategy)

**CALCULATION NOTES:**

* **FLAG: ASSUMED** organic percentage based on typical artisan bakery positioning
* Organic premium is ~50% over conventional
* Parkside uses blend to balance quality perception with cost control

**LEAVENING:**

* Sourdough Starter Maintenance: Negligible (discard used for experiments, not wasted)
* Instant Dry Yeast (Commercial, SAF brand): $37.40/kg
* **Per-product yeast cost:**
  + Baguette: $0.01-0.02 per unit
  + Sandwich Loaf: $0.03 per unit
  + Ciabatta: $0.01 per unit
  + Focaccia: $0.01 per portion

**DAIRY & FATS:**

* Whole Milk (Commercial, local distributor): $2.55/liter
* Unsalted Butter (Commercial, 84% butterfat): $12.75/kg
* Olive Oil (Bulk EVOO, food service quality): $13.60/liter
* **FLAG: ASSUMED** pricing based on standard commercial dairy distributor rates

**SALT & SEASONINGS:**

* Fine Sea Salt (Bulk): $0.85/kg
* Flaky Sea Salt (Maldon, finishing): $30.60/kg (used sparingly, ~200g/month = $6.12)
* Caraway Seeds: $20.40/kg
* Mixed Seeds (sunflower, flax, sesame): $13.60/kg average

**SPECIALTY ADD-INS:**

* Kalamata Olives (Bulk, pitted): $11.05/kg
* Fresh Rosemary (Local farm, seasonal): $34.00/kg (highly variable)
* Fresh Thyme: $30.60/kg
* Brown Sugar: $3.74/kg
* Honey (Local, bulk): $20.40/kg
* Malt Powder (Diastatic): $13.60/kg

**5.2 Pricing Structure for Each Product**

**PRICING METHODOLOGY:**

* Target food cost: 25-30% of retail price (industry standard)
* Wholesale pricing: Cost + 30-40% markup (allows retailer 60-80% markup to consumer)
* Competitive analysis: Market rate for similar products in area

**DETAILED PRODUCT PRICING TABLE:**

| **Product** | **Ingredient Cost** | **Target Food Cost %** | **Retail Price** | **Gross Margin (Retail)** | **Wholesale Price** | **Wholesale Margin** |
| --- | --- | --- | --- | --- | --- | --- |
| Country Sourdough | $2.72 | 30.2% | $9.00 | $6.28 (69.8%) | $5.75 | $3.03 (52.7%) |
| Whole Grain Sourdough | $3.21 | 33.8% | $9.50 | $6.29 (66.2%) | $6.00 | $2.79 (46.5%) |
| Seeded Multigrain | $3.76 | 37.6% | $10.00 | $6.24 (62.4%) | $6.50 | $2.74 (42.2%) |
| Baguette | $0.73 | 18.3% | $4.00 ( | $3.27 81.8%) | $2.60 ( | $1.87 72.1%) |
| Ciabatta | $1.89 | 25.2% | $7.50 ( | $5.61 74.8%) | $4.90 ( | $3.01 61.4%) |
| Whole Wheat Sandwich | $5.29 | 62.2% | $8.50 ( | $3.21 37.8%) | $5.50 | $0.21 (3.8%) |
| Olive & Rosemary | $3.77 | 35.9% | $10.50 ( | $6.73 64.1%) | $6.75 | $2.98 (44.1%) |
| Rye Sourdough | $2.98 | 30.6% | $9.75 (6 | $6.77 9.4%) | $6.25 ( | $3.27 52.3%) |
| Rosemary Focaccia (portion) | $0.26 | 5.8% | $4.50 ( | $4.24 94.2%) | $3.00 | $2.74 (91.3%) |
| Seasonal Focaccia (portion) | $0.34-0.51 | 6.8-10.2% | $5.00-5.50 | $4.49-4.99 | $3.25-3.50 | $2.74-2.99 |

**NOTES ON PRICING:**

* **Focaccia has highest gross margin** (lowest ingredient cost, premium pricing) - this is strategic
* **Sandwich loaf has lowest retail margin** (high ingredient cost, competitive pricing pressure)
* **Baguettes are loss-leader** (attract morning commuters, low margin but high volume)
* **Wholesale pricing provides healthy margin for partners** while still profitable for bakery

**COMPETITIVE ANALYSIS** (Local Market):

* Supermarket artisan bread: $5.00-7.00 per loaf (mass-produced, preservatives)
* Other artisan bakeries (within 5 miles): $8.50-11.00 per sourdough loaf
* Farmer's market artisan bread: $9.00-13.00 per loaf
* **Parkside positioning:** Mid-range artisan, emphasizing value and accessibility

**5.3 Daily/Weekly/Monthly Revenue Projections**

**DAILY REVENUE (By Day of Week):**

**TUESDAY (Typical Weekday):**

* **Retail Sales (70% of production):**
  + Country Sourdough: 35 loaves x $9.00 = $315
  + Whole Grain: 17 loaves x $9.50 = $162
  + Seeded Multigrain: 14 loaves x $10.00 = $140
  + Baguettes: 28 x $4.00 = $112
  + Ciabatta: 10 loaves x $7.50 = $75
  + Sandwich Loaf: 14 loaves x $8.50 = $119
  + Focaccia: 17 portions x $4.50 = $77
  + **Subtotal Retail: $1,000**
* **Wholesale Sales (30% of production):**
  + Country Sourdough: 15 loaves x $5.75 = $86
  + Whole Grain: 8 loaves x $6.00 = $48
  + Seeded Multigrain: 6 loaves x $6.50 = $39
  + Baguettes: 12 x $2.60 = $31
  + Ciabatta: 5 loaves x $4.90 = $25
  + Sandwich Loaf: 6 loaves x $5.50 = $33
  + Focaccia: 7 portions x $3.00 = $21
  + **Subtotal Wholesale: $283**
* **TUESDAY TOTAL: $1,283**

**WEDNESDAY:**

* Retail: $1,050 (slight uptick, Olive & Rosemary adds premium sales)
* Wholesale: $295
* **TOTAL: $1,345**

**THURSDAY:**

* Retail: $1,020 (Rye Sourdough specialty sales)
* Wholesale: $290
* **TOTAL: $1,310**

**FRIDAY:**

* Retail: $1,180 (pre-weekend bump)
* Wholesale: $310
* **TOTAL: $1,490**

**SATURDAY (Peak Day):**

* Retail: $1,750 (highest foot traffic, premium product mix)
* Wholesale: $450 (some wholesale partners take weekend orders)
* **TOTAL: $2,200**

**SUNDAY:**

* Retail: $1,400 (strong morning, short hours)
* Wholesale: $320
* **TOTAL: $1,720**

**WEEKLY REVENUE SUMMARY:**

* Monday: $0 (CLOSED)
* Tuesday: $1,283
* Wednesday: $1,345
* Thursday: $1,310
* Friday: $1,490
* Saturday: $2,200
* Sunday: $1,720
* **WEEKLY TOTAL: $9,348**

**MONTHLY REVENUE (4-Week Month):**

* **Gross Revenue: $37,392/month**
* **Annual Revenue (48 operating weeks): $448,704**

**REVENUE BREAKDOWN BY CHANNEL:**

* Retail (70%): $26,174/month
* Wholesale (30%): $11,218/month

**AVERAGE TRANSACTION VALUES:**

* Retail: ~$18.50 per transaction (typically 2-3 items)
* Wholesale: ~$85 per order (bulk purchases)

**CUSTOMER VOLUME:**

* **Weekly customer transactions:** ~800 retail, ~35 wholesale orders
* **Monthly:** ~3,200 retail customers, ~140 wholesale orders

**SEASONALITY NOTES:**

* **Peak months:** October-December (holiday baking, gift loaves, colder weather)
  + Revenue boost: +15-20% over baseline
  + December can reach $45,000-48,000
* **Slow months:** January-February (post-holiday lull, diet resolutions)
  + Revenue drop: -10-15% from baseline
  + January can drop to $32,000-33,000
* **Steady months:** March-September (baseline production)

**FLAG: ASSUMED** - Seasonality percentages based on typical bakery industry patterns, not specific to Parkside

**5.4 Operating Costs (Complete Monthly Breakdown)**

**FIXED COSTS** (Incurred regardless of sales volume):

**Occupancy:**

* **Rent:** $2,750/month (1,500 sq ft @ $1.83/sq ft, suburban commercial rate)
  + **FLAG: ASSUMED** - Typical rate for suburban commercial space, not prime downtown
* **Property Insurance:** $185/month ($2,220/year policy)
* **Liability Insurance:** $240/month (general liability + product liability)
* **Equipment Insurance:** $85/month (covers oven, mixer, major equipment)
* **SUBTOTAL Occupancy: $3,260/month**

**Utilities:**

* **Electricity:** $520/month
  + Oven: ~$180 (largest draw, 22-28 kW for 9 hours/day, 6 days/week)
  + Refrigeration: ~$110 (walk-in + reach-ins + retarder, continuous)
  + Lighting: ~$45 (LED throughout, but 15+ hours/day operation)
  + Mixer, fans, misc: ~$90
  + HVAC (AC in summer): ~$95 (seasonal variation)
* **Gas:** $180/month (heating in winter, hot water year-round)
  + Winter peak: $280/month (Dec-Feb)
  + Summer low: $95/month (Jun-Aug)
  + Average: $180/month
* **Water/Sewer:** $85/month (production water, cleaning, customer restroom)
* **Waste Removal:** $145/month (3x/week trash pickup, commercial rate)
* **Composting Service:** $75/month (organic waste, donated food scraps)
* **SUBTOTAL Utilities: $1,005/month**

**Equipment & Technology:**

* **POS Software:** $60/month (Square for Retail subscription)
* **Card Processing Fees:** ~$300/month (2.6% + $0.10 per transaction on ~$26,000 retail sales)
  + **FLAG: ASSUMED** - Calculated based on 80% card, 20% cash assumption
* **Accounting Software:** $35/month (QuickBooks Online)
* **Website Hosting & Domain:** $25/month (Squarespace + custom domain)
* **Equipment Maintenance Reserve:** $150/month (set-aside for repairs)
* **SUBTOTAL Equipment & Tech: $570/month**

**Professional Services:**

* **Accountant/Bookkeeper:** $200/month (quarterly tax prep, monthly review)
* **Legal/Compliance:** $50/month (annual permit renewals, occasional consults)
* **SUBTOTAL Professional: $250/month**

**TOTAL FIXED COSTS: $5,085/month**

**VARIABLE COSTS** (Scale with production):

**Cost of Goods Sold (COGS):**

* **Ingredients:** $5,444/month (detailed in section 4.4)
  + This represents 14.6% of gross revenue (very efficient)
  + **FLAG: ASSUMES** efficient purchasing, minimal waste
* **Packaging Materials:** $986/month
  + Bread bags: $544
  + Baguette bags: $145
  + Focaccia containers: $68
  + Branded stickers/labels: $136
  + Twine, tissue, boxes: $93
* **SUBTOTAL COGS: $6,730/month (18.0% of revenue)**

**Labor Costs:**

* **Marcus (Owner/Head Baker):** $4,333/month (salary draw)
* **Rachel (Production Baker):** $3,510/month (45 hrs/wk average x $19.50/hr x 4 weeks)
* **David (Baker/Supervisor):** $2,808/month (39 hrs/wk x $18.00/hr x 4 weeks)
* **Sarah (FOH Lead):** $2,040/month (30 hrs/wk x $16.50/hr x 4 weeks)
* **Payroll Taxes (Employer portion):** $1,270/month (10% of gross wages, approx)
  + FICA: 7.65%
  + Federal unemployment: 0.6%
  + State unemployment: ~2%
* **Workers' Compensation Insurance:** $195/month (based on bakery risk class)
* **SUBTOTAL Labor: $14,156/month (37.9% of revenue)**

**Marketing & Customer Acquisition:**

* **Social Media Ads:** $120/month (Facebook/Instagram boosted posts)
* **Local Print Advertising:** $85/month (community newspaper, seasonal)
* **Loyalty Program / Promotions:** $95/month (punch cards, occasional discounts)
* **Website Maintenance:** Included in tech costs above
* **Photography / Content Creation:** $50/month (occasional professional photos)
* **SUBTOTAL Marketing: $350/month (0.9% of revenue)**

**Other Variable Costs:**

* **Credit Card Processing (variable portion):** Included in Fixed costs above
* **Merchant Supplies:** $45/month (receipt paper, register tape, cash register bags)
* **Cleaning Supplies:** $130/month (sanitizer, soap, mop heads, trash bags)
* **Small Tools & Supplies:** $75/month (replacement scrapers, thermometers, wear items)
* **Uniforms / Aprons:** $40/month (laundry service, occasional replacements)
* **SUBTOTAL Other Variable: $290/month**

**TOTAL VARIABLE COSTS: $18,776/month**

**TOTAL MONTHLY OPERATING EXPENSES:**

* Fixed Costs: $5,085
* Variable Costs: $18,776
* **GRAND TOTAL: $23,861/month**

**AS PERCENTAGE OF REVENUE:**

* **Total Operating Expenses: 63.8% of revenue**

**5.5 Profit Margins and Financial Performance**

**MONTHLY PROFIT & LOSS STATEMENT (Typical Month):**

| **Line Item** | **Amount** | **% of Revenue** |
| --- | --- | --- |
| **REVENUE** |  |  |
| Retail Sales | $26,174 | 70.0% |
| Wholesale Sales | $11,218 | 30.0% |
| **Total Revenue** | **$37,392** | **100.0%** |
| **COST OF GOODS SOLD** |  |  |
| Ingredients | $5,444 | 14.6% |
| Packaging | $986 | 2.6% |
| **Total COGS** | **$6,730** | **18.0%** |
| **GROSS PROFIT** | **$30,662** | **82.0%** |
| **OPERATING EXPENSES** |  |  |
| *Labor Costs* |  |  |
| Salaries & Wages | $12,691 | 33.9% |
| Payroll Taxes | $1,270 | 3.4% |
| Workers' Comp | $195 | 0.5% |
| **Total Labor** | **$14,156** | **37.9%** |
| *Occupancy* |  |  |
| Rent | $2,750 | 7.4% |
| Insurance (Property & Liability) | $510 | 1.4% |
| **Total Occupancy** | **$3,260** | **8.7%** |
| *Utilities* |  |  |
| Electricity | $520 | 1.4% |
| Gas | $180 | 0.5% |
| Water/Sewer | $85 | 0.2% |
| Waste/Compost | $220 | 0.6% |
| **Total Utilities** | **$1,005** | **2.7%** |
| *Technology & Equipment* |  |  |
| POS & Processing Fees | $360 | 1.0% |
| Software & Web | $60 | 0.2% |
| Maintenance Reserve | $150 | 0.4% |
| **Total Tech/Equipment** | **$570** | **1.5%** |
| *Marketing* | $350 | 0.9% |
| *Professional Services* | $250 | 0.7% |
| *Other Variable Costs* | $290 | 0.8% |
| **Total Operating Expenses** | **$19,881** | **53.2%** |
| **OPERATING INCOME (EBITDA)** | **$10,781** | **28.8%** |
| **Other Expenses** |  |  |
| Equipment Depreciation | $585 | 1.6% |
| *Equipment cost: $45,000, depreciated over 7 years* |  |  |
| Interest Expense (if applicable) | $0 | 0.0% |
| *FLAG: ASSUMES no business loan* |  |  |
| **NET INCOME (Before Owner Distribution)** | **$10,196** | **27.3%** |
| **OWNER'S DRAW** (included in labor above) | $4,333 | 11.6% |
| **RETAINED PROFIT** (Available for reinvestment/taxes) | **$5,863** | **15.7%** |

**ANNUAL FINANCIAL PROJECTIONS:**

**Annual Revenue:** $448,704 (48 operating weeks)

**Annual Expenses:**

* COGS: $80,760 (18.0%)
* Labor (including owner): $169,872 (37.9%)
* Occupancy: $39,120 (8.7%)
* Utilities: $12,060 (2.7%)
* Other Operating: $15,420 (3.4%)
* Depreciation: $7,020 (1.6%)
* **Total Annual Expenses: $324,252 (72.3% of revenue)**

**Annual Net Profit (Before Owner Distribution):** $124,452 (27.7%)

* **Owner's Draw (salary):** $52,000
* **Retained Annual Profit:** $72,452 (16.1%)

**Owner's Total Compensation:**

* Salary draw: $52,000
* Share of retained profit (for taxes, reinvestment, or distribution): Variable
* **Effective Owner Income:** $70,000-80,000 depending on profit distribution

**PROFITABILITY ANALYSIS:**

**Gross Profit Margin:** 82.0%

* **Interpretation:** Excellent gross margin, indicating strong pricing power and efficient ingredient use
* **Industry benchmark:** 65-75% is typical for bakeries
* **Parkside advantage:** Focus on high-margin focaccia and specialty breads elevates average

**Operating Profit Margin (EBITDA):** 28.9%

* **Interpretation:** Very strong operating performance
* **Industry benchmark:** 15-25% is good for small bakeries
* **Parkside advantage:** Lean staffing, efficient operations, strong wholesale relationships

**Net Profit Margin:** 27.3% (before owner distribution) or 15.7% (after owner draw)

* **Interpretation:** Exceptional profitability for a small bakery
* **Industry benchmark:** 5-15% net profit is typical, 20%+ is excellent
* **Parkside success factors:**
  + Low rent (suburban location)
  + Efficient COGS (18.0% vs. industry average 25-35%)
  + Strong product mix (high-margin focaccia balances lower-margin sandwich loaves)
  + Lean operation (4 employees producing $450K revenue)

**KEY FINANCIAL RATIOS:**

**Prime Cost Ratio:** (COGS + Labor) / Revenue = 55.9%

* **Interpretation:** VERY GOOD (industry target is <65%, many bakeries run 70-75%)
* This is the most critical metric in food service - Parkside's efficiency here drives profitability

**Revenue per Labor Hour:**

* Total weekly labor hours: ~165 hours (Marcus 50, Rachel 45, David 39, Sarah 30)
* Weekly revenue: $9,348
* **Revenue per labor hour: $56.65**
* **Industry benchmark:** $40-50/hour is good
* **Interpretation:** High productivity team, efficient workflows

**Revenue per Square Foot:**

* Annual revenue: $448,704
* Square footage: 1,500 sq ft
* **Revenue per sq ft: $299/year**
* **Industry benchmark:** $200-250/sq ft for bakery/cafe
* **Interpretation:** Above-average space utilization

**Break-Even Analysis:**

**Monthly Fixed Costs:** $5,085

**Contribution Margin:**

* Average selling price per loaf (weighted): $8.15
* Average variable cost per loaf (COGS + variable labor): $2.85
* **Contribution margin per loaf: $5.30 (65%)**

**Break-Even Point:**

* Fixed Costs / Contribution Margin = $5,085 / $5.30 = **959 loaves/month**
* **Current production:** 1,190 loaves/week x 4 = **4,760 loaves/month**
* **Break-even reached at:** 20% of current production volume

**Safety Margin:** Parkside operates at 496% of break-even volume

* **Interpretation:** Very safe financial position, can absorb significant sales decline

**6. CONSTRAINTS AND COMPLICATIONS**

**6.1 Equipment Capacity Bottlenecks**

**PRIMARY BOTTLENECK: Oven Capacity**

**Current State:**

* 3-deck oven, ~25 loaves per full cycle
* **Maximum theoretical daily capacity:** 300 loaves (12 bake cycles x 25 loaves)
* **Practical daily capacity:** 250 loaves (10-11 cycles, allowing buffer)
* **Saturday production:** 250 loaves (AT CAPACITY)

**Implications:**

* Cannot increase weekend production without equipment investment
* Any equipment failure on Saturday = catastrophic revenue loss ($2,200)
* Cannot accept large special orders (e.g., corporate event for 100 loaves) without disrupting regular production

**Mitigation Strategies:**

* **Option 1:** Add 4th oven deck
  + Cost: ~$6,000 for additional deck + installation
  + Benefit: +33% capacity (increases max to 32 loaves/cycle)
  + Challenge: Requires more electrical capacity (already near panel limit)
* **Option 2:** Add second oven
  + Cost: ~$18,000+ for second 2-3 deck oven
  + Benefit: Doubles capacity, provides redundancy
  + Challenge: Space constraint (would need to reconfigure BOH layout)
* **Option 3:** Extend hours (earlier start)
  + Cost: Minimal (no equipment)
  + Benefit: +2-3 additional bake cycles possible
  + Challenge: Staff burnout (already 4:00 AM start), quality of life for Marcus
* **Current Strategy:** Accept capacity limitation, maintain quality over volume

**SECONDARY BOTTLENECK: Retarder Capacity**

**Current State:**

* 36-pan retarder capacity = ~200 loaves maximum overnight cold proof
* **Saturday production requires:** 220-240 loaves (exceeds capacity)

**Current Workaround:**

* Some Friday night shaped loaves proof at room temp for 3-4 hours, then baked late Friday night
* These loaves sold Saturday morning (12-18 hour old, not ideal)
* **Quality trade-off accepted** to meet weekend demand

**Future Mitigation:**

* Add second retarder unit: $1,500-2,500
* This is planned investment for Year 3 (2026)

**TERTIARY BOTTLENECK: Cooling Rack Space**

**Current State:**

* 4 cooling racks x 20 pans = 80 pan positions
* Each loaf needs ~3 hours cooling minimum
* **Saturday morning (peak):** All 80 positions occupied by 9:00 AM

**Implications:**

* Cannot continue baking until racks clear (space opens)
* Creates forced pause in production mid-morning
* Some loaves cooled on sheet pans on counters (non-ideal, takes bench space)

**Mitigation:**

* Purchase 2 additional cooling racks: $370 total
* This is planned for Q1 2026
* Alternative: Faster rotation to packaging (start packaging at 2 hours for some products)

**6.2 Timing Dependencies (Critical Path Issues)**

**DEPENDENCY #1: Starter Health → Entire Sourdough Production**

**Critical Path:**

* If starter is weak/sluggish → Levain build takes 10-12 hours instead of 6-8
* **Delay consequence:** Cannot mix sourdough on schedule
* **Cascade effect:**
  + Delayed mix → Delayed bulk fermentation → Delayed shaping
  + Delayed shaping → Late loading into retarder (or skipped cold proof)
  + Late retarder load → Late morning bake → Late availability in retail display
  + **Revenue impact:** $400-800 lost (morning customers buy elsewhere)

**Root Causes of Weak Starter:**

* Temperature fluctuations (walk-in cooler malfunction)
* Missed feeding (human error on Monday prep)
* Old starter (needs "refreshing" with multiple feedings)

**Preventive Measures:**

* **Daily starter assessment:** Marcus visually inspects every morning
* **Backup starter:** Small emergency starter kept separately (insurance policy)
* **Temperature monitoring:** Walk-in cooler has high-temp alarm
* **Training:** Rachel and David trained on starter maintenance (redundancy)

**DEPENDENCY #2: Bulk Fermentation Timing → Shaping Window**

**Critical Path:**

* Sourdough bulk fermentation is 4-6 hours (temperature-dependent)
* **Shaping window:** Dough must be shaped when bulk fermentation is complete
* **Cannot delay:** Over-fermented dough collapses, becomes unusable
* **Cannot rush:** Under-fermented dough won't develop flavor, structure

**Challenge:**

* Marcus and Rachel must be available for shaping at the moment bulk fermentation completes
* **If both are busy with other tasks (e.g., wholesale delivery, equipment issue), shaping is delayed**
* Over-proofed dough = wasted batch (up to 50 kg dough = $80 ingredient loss + lost revenue)

**Mitigation:**

* **Stagger mix times:** Country batch 1 at 6:00 AM, batch 2 at 7:00 AM (shaping windows separated)
* **Temperature control:** Use cooler area for slower fermentation (buys time flexibility)
* **Visual monitoring:** Check dough every 30 min once 3 hours elapsed (anticipate completion)
* **Team backup:** David trained to assist with shaping if Marcus/Rachel unavailable

**DEPENDENCY #3: Cold Proof Duration → Morning Bake Quality**

**Critical Path:**

* Loaves shaped in evening (6:00-8:00 PM) → Load into retarder → Cold proof overnight → Bake next morning (5:00 AM)
* **Ideal cold proof:** 10-12 hours at 40°F
* **Too short (< 8 hours):** Under-proofed, won't rise properly in oven (dense crumb)
* **Too long (> 16 hours):** Over-proofed, collapses in oven (flat loaves)

**Potential Disruptions:**

* **Late shaping:** If shaping finishes at 9:00 PM instead of 8:00 PM → Only 8 hours cold proof → Under-proofed
  + **Consequence:** Loaves must be pulled early from retarder, allowed to warm up/proof longer (delays bake)
* **Retarder malfunction:** If temperature rises above 45°F, fermentation accelerates
  + **Consequence:** Over-proofed loaves (must discard or repurpose for breadcrumbs/stuffing)

**Mitigation:**

* **Strict shaping schedule:** 12:00-2:00 PM window for next-day production (non-negotiable)
* **Retarder alarm:** Temperature alarm alerts if above 42°F
* **Backup plan:** If late shaping occurs, adjust morning bake schedule (bake under-proofed loaves last, allow warming time)

**DEPENDENCY #4: Oven Temperature Recovery → Bake Scheduling**

**Critical Path:**

* Oven requires 10-15 minutes between bakes to recover temperature after cold dough loaded
* **If next batch loaded too soon:** Oven temperature too low → Poor oven spring → Dense loaves, pale crust
* **If wait too long:** Idle time → Productivity loss → Cannot complete all bakes by closing

**Saturday Challenge:**

* 14 bake cycles needed (see section 4.3)
* **Total oven time:** 11+ hours
* **Zero tolerance for delays:** Any 15-minute setback means 1 bake cycle lost
* **Lost cycle = 25-30 loaves not produced = $180-225 revenue loss**

**Mitigation:**

* **Strict timer discipline:** Marcus uses multiple timers, cannot be distracted
* **Pre-staging:** Next batch always prepped and ready before current bake completes (no downtime)
* **Temperature monitoring:** Quick visual check of oven temp between loads (handheld IR thermometer)
* **Sequence optimization:** Strategic ordering of bakes (high-temp breads first, enriched breads during cooldown periods)

**6.3 Quality Control Points**

**QC CHECKPOINT #1: Dough Temperature (DDT - Desired Dough Temperature)**

**Target:** 76-78°F after final mix

**Why Critical:**

* Dough temperature directly controls fermentation speed
* **Too cold (< 72°F):** Sluggish fermentation, extended bulk time (schedule delays)
* **Too warm (> 82°F):** Rapid fermentation, risk of over-proofing, off flavors (acetic vs. lactic acid balance shifts)

**Monitoring:**

* **Thermometer used:** Instant-read digital, $25 ThermoWorks model
* **When checked:** Immediately after mixing complete (before transfer to fermentation tub)
* **Frequency:** Every batch (100% inspection)
* **Corrective action if out of range:**
  + Too cold: Place tub near oven or warm area (ambient temp boost)
  + Too warm: Place tub in cooler area or briefly in walk-in (drop temp)

**Root Cause Prevention:**

* **Water temperature calculation:** Marcus calculates required water temp before each mix
  + Formula: Desired DDT x 3 - (Room Temp + Flour Temp + Friction Factor) = Water Temp
  + **Example:** Target 76°F, Room 70°F, Flour 68°F, Friction Factor 22°F → Water temp = 76x3 - (70+68+22) = 228 - 160 = 68°F
  + **FLAG: ASSUMED** friction factor based on typical spiral mixer (varies by model)

**QC CHECKPOINT #2: Bulk Fermentation Completion**

**Visual/Tactile Indicators:**

* 75-100% volume increase (marked on tub)
* Domed surface (not flat or collapsed)
* Visible bubbles on surface and through sides of clear tub
* **"Wobble test":** Tub shaken gently, dough jiggles (indicates gas retention)
* **Poke test:** Finger pressed into dough, indentation slowly springs back halfway

**Why Critical:**

* Under-fermented: Dense crumb, poor flavor, loaf won't rise in oven
* Over-fermented: Dough collapses, sour flavor, gummy texture

**Monitoring:**

* **Who:** Marcus or Rachel (experienced eye required)
* **When:** Every 30 min once 3 hours elapsed
* **Decision:** "Go/No-Go" for shaping

**Common Issues:**

* **Uneven fermentation:** Top of dough more active than bottom
  + **Cause:** Poor mixing, temperature gradient in room
  + **Corrective action:** Perform additional fold to redistribute heat and gases
* **Slow fermentation:** Still flat after 6 hours
  + **Cause:** Weak starter, cold dough temp, low ambient temp
  + **Corrective action:** Extend bulk time, move to warmer location

**QC CHECKPOINT #3: Final Proof Readiness (Pre-Bake)**

**Poke Test Protocol:**

* Finger pressed gently into dough (1/2 inch depth)
* **Under-proofed:** Springs back quickly and completely
* **Properly proofed:** Springs back slowly, halfway (indentation remains slightly visible)
* **Over-proofed:** Does not spring back, indentation remains or collapses

**Why Critical:**

* Under-proofed: Loaf will have tight crumb, tear/rupture in oven (uncontrolled burst)
* Properly proofed: Maximum oven spring, optimal open crumb, clean score marks
* Over-proofed: Loaf collapses in oven (flat), gummy texture, off flavors

**Monitoring:**

* **Who:** Marcus (100% of loaves assessed before scoring)
* **When:** Just before loading into oven (cold-retarded loaves pulled 15 min prior to assess)
* **Decision:** Bake immediately, delay, or discard

**Challenge with Cold Proof:**

* Cold-retarded loaves come from retarder at 40°F
* **Poke test unreliable on cold dough** (false "under-proofed" reading)
* **Solution:** Allow 10-15 min at room temp, re-assess (dough warms slightly, gives true reading)

**Corrective Action:**

* **Under-proofed:** Delay bake, allow 20-30 min additional proof at room temp
* **Over-proofed:** Bake immediately (cannot reverse), lower oven temp slightly (reduce oven spring demand), accept lower quality

**QC CHECKPOINT #4: Bake Completion Assessment**

**Visual Indicators:**

* **Crust color:** Deep golden-brown to dark brown (product-specific)
  + Country Sourdough: Rich mahogany brown
  + Rye: Very dark brown (darker than wheat breads)
  + Baguette: Golden with blistered crust
* **Score marks:** "Ear" formation (raised edge along score), clean opening (not torn)
* **Shape:** Even rise, no flat sides or collapsed areas

**Auditory Indicator:**

* **Hollow sound:** Tap bottom of loaf, should produce hollow "thump"
  + Solid thud = under-baked (doughy interior)

**Temperature Check:**

* **Internal temp:** Instant-read thermometer inserted into center
  + Lean breads (sourdough, baguette): 205-210°F
  + Enriched breads (sandwich loaf): 200-205°F (lower due to fat content)
  + Rye breads: 205-207°F

**Why Critical:**

* Under-baked: Gummy interior, poor shelf life (spoils faster), unpleasant texture
* Over-baked: Excessively thick crust, dry crumb, burnt flavor

**Monitoring:**

* **Who:** Marcus or David (responsible for oven)
* **When:** End of bake cycle (timer goes off)
* **Frequency:** Visual on 100% of loaves, temp check on 2-3 loaves per batch (sample)

**Corrective Action:**

* **If under-baked (caught early):** Return to oven for 5-10 min additional time
* **If under-baked (post-cooling):** Mark for staff consumption or donation (cannot sell)
* **If over-baked:** Assess severity
  + Slightly over: Sell at discount ("rustic" style)
  + Severely over: Repurpose (breadcrumbs, croutons) or discard

**QC CHECKPOINT #5: Post-Bake Cooling and Packaging**

**Cooling Protocol:**

* **Minimum time:** Product-specific (see section 4.1)
  + Baguettes: 30-45 min
  + Sourdough: 3 hours
  + Whole grain/rye: 4-6 hours
* **Touch test:** Loaf should be barely warm or room temperature before packaging

**Why Critical:**

* Packaging hot bread: Trapped steam condenses, makes crust soggy, promotes mold growth
* Result: Reduced shelf life (spoils in 1 day instead of 3 days)

**Monitoring:**

* **Who:** Sarah (FOH) or David
* **When:** Before packaging for sale
* **Rule:** "If in doubt, wait another hour"

**Common Mistake:**

* Rushing to package during busy retail period (customers want fresh bread immediately)
* **Consequence:** Customer complaints about soggy bread, mold growth
* **Prevention:** Clear communication to customers ("This loaf just came out! It'll be perfect in 2 hours, or you can take it warm and keep the bag open until it cools")

**6.4 Waste and Shrinkage Factors**

**INGREDIENT WASTE:**

**Flour Waste:**

* **Sources:**
  + Dusting benches, bannetons (necessary for production, not waste)
  + Spills during scaling/pouring (human error)
  + Torn bags (occasional)
* **Typical rate:** 2-3% of flour purchased
  + Annual flour: ~30,000 kg
  + Annual waste: 600-900 kg (not usable in bread)
  + **Cost:** $525-788/year

**Mitigation:**

* Use bench flour in levain feeds (recapture)
* Train staff on careful handling
* Proper storage (sealed containers, dry conditions)

**Starter Discard:**

* **Daily discard:** 200g/day x 6 days = 1.2 kg/week = ~60 kg/year
* **Cost:** ~$53/year (minimal)
* **Not true waste:** Some used for experiments, crackers, or home baking by staff

**PRODUCTION WASTE (Unsold Finished Product):**

**Daily Spoilage Rate:**

* **Target:** < 3% of production (industry best practice)
* **Current:** 5-7% average (typical for quality-focused artisan bakery)
* **Breakdown by cause:**
  + Production error (under-baked, over-baked, cosmetic defects): 2%
  + Unsold inventory (over-production): 3-5%
  + Damage during handling: < 1%

**Weekly Waste Calculation:**

* **Production:** 1,190 loaves + 255 baguettes = 1,445 units
* **Waste at 6%:** 87 units/week
* **Cost per unit (average):** $3.40 ingredient cost
* **Weekly waste cost:** $296
* **Annual waste cost:** $15,392

**Impact on Profitability:**

* 6% waste = 6% of COGS wasted
* On $80,760 annual COGS, waste = $4,846 annually
* **This is ~1.1% of gross revenue** (manageable but not ideal)

**Waste Mitigation Strategies:**

**1. Accurate Sales Forecasting:**

* **Method:** Track daily sales by product for 12+ weeks
* **Identify patterns:**
  + Rainy days = lower foot traffic, reduce production by 10%
  + First week of month (payday) = higher sales
  + Saturdays consistently highest (plan accordingly)
* **Adjust production:** Fine-tune daily quantities based on historical data
* **Current challenge:** Only 2.5 years of data, still learning seasonal patterns

**2. Day-Old Bread Protocol:**

* **Day-old bread policy:**
  + 30% discount (e.g., $9 sourdough → $6.30 day-old)
  + Clearly labeled "Baked Yesterday"
  + Sold in dedicated section of display case
* **Typical day-old volume:** 15-25 loaves/day (from previous day's unsold)
* **Day-old revenue:** $90-150/day (better than zero)

**3. Donation Program:**

* **Partnership:** Local food bank (Mapleton Community Kitchen)
* **Schedule:** Tuesday & Friday pickups
* **Volume:** 30-50 loaves/week donated
* **Tax benefit:** Itemized deduction at fair market value (~$350/week = $18,000/year)
* **FLAG: ASSUMED** - Tax treatment per IRS guidelines on food donation

**4. Staff Purchase Program:**

* **Discount:** 50% off for employees (end-of-day purchases)
* **Usage:** Staff buy imperfect loaves, slightly over-baked, etc.
* **Benefit:** Reduces waste, provides perk for employees

**5. Repurposing:**

* **Breadcrumbs:** Severely over-baked or very stale bread processed into breadcrumbs
  + Packaged in 8oz bags, sold for $3.50/bag
  + ~5 loaves/week repurposed → 3-4 bags → $10-14 recovered revenue
* **Croutons:** Cubed day-old bread, seasoned, baked
  + Sold in FOH for $4.50/bag (6oz)
  + Popular salad topping, ~8 bags/week sold

**SHRINKAGE (Theft/Unexplained Loss):**

**Monitoring:**

* **Daily inventory count:** Sarah counts all loaves in FOH at end of shift, compares to POS sales
* **Expected:** POS sales + day-old inventory + damaged/donated = total production
* **Shrinkage:** Unexplained difference

**Current Shrinkage Rate:** ~0.5% of production

* **Weekly:** 7-8 loaves unaccounted for
* **Annual cost:** ~$4,500 (retail value)

**Sources:**

* **Customer theft:** Rare (small space, visible counter, difficult to conceal loaf)
* **Staff consumption:** Tasting for quality control, small pieces for personal consumption (tolerated)
* **Counting errors:** Most likely cause (human error in daily count)

**Acceptable Loss:**

* **Industry standard:** 1-2% shrinkage is normal
* **Parkside at 0.5%:** Well-controlled, not a concern

**6.5 What Happens When Things Go Wrong (Failure Scenarios)**

**SCENARIO #1: Oven Failure (Mid-Saturday)**

**Event:** Oven stops heating at 9:00 AM, Saturday (peak production day)

* **Production status:** 75 Country Sourdough baked, 60 more loaves shaped and cold-proofed (not yet baked)
* **Remaining bakes:** Whole Grain, Multigrain, Baguettes, Specialty loaves all unproduced

**Immediate Impact:**

* **Lost production:** 175 loaves + 50 baguettes = ~$1,700 revenue
* **Wasted COGS:** Shaped dough cannot be saved (over-proofs waiting for repair) = ~$280 ingredient loss
* **Customer dissatisfaction:** Regular Saturday customers arrive, find empty shelves (brand damage)

**Response Protocol:**

1. **Assess repair timeline:**
   * Call equipment service company (response time: 2-4 hours on weekend)
   * If repairable same-day: Hold cold-proofed dough in retarder (buys a few hours)
   * If multi-day repair: Dough is lost (will over-proof)
2. **Customer communication:**
   * Post on Instagram/Facebook immediately: "Equipment issue today, limited selection available"
   * Update website: "Saturday hours adjusted"
   * Sarah makes calls to wholesale accounts: "Cannot fulfill orders today"
3. **Wholesale order management:**
   * **Priority:** Long-term wholesale partners get available inventory first
   * Offer credit/makeup delivery on Tuesday
4. **Dough repurposing (if overnight repair):**
   * Over-proofed dough can sometimes be re-worked:
     + Knock back, re-shape, proof again (quality suffers, but salvages some value)
     + Or donate entire batch to food bank immediately (tax write-off)
5. **Revenue recovery:**
   * **Sunday:** Ramp up production to 130% of normal (extra shift hours)
   * **Tuesday:** Offer "Welcome Back" promotion (10% off to apologize for Saturday)

**Cost of Event:**

* Lost revenue: $1,700
* Wasted COGS: $280
* Emergency repair: $500-800 (weekend service call + parts)
* Staff overtime (Sunday makeup): $200
* **Total impact:** ~$2,680-3,000

**Prevention/Mitigation:**

* **Quarterly preventive maintenance:** Service call every 3 months ($180/visit) to catch issues early
* **Equipment reserve fund:** $150/month saved for emergency repairs (annual $1,800 reserve)
* **Backup plan:** Identify nearby commercial kitchen (shared kitchen space) that could be rented in emergency
  + **FLAG: NOT CURRENTLY ESTABLISHED** - This is a gap in current business continuity plan

**SCENARIO #2: Refrigeration Failure (Overnight)**

**Event:** Walk-in cooler compressor fails at 11:00 PM Friday night, temperature rises to 65°F by morning

* **Contents affected:**
  + 150 cold-proofed loaves in bannetons (Country, Whole Grain, Multigrain)
  + 200 lbs dairy (milk, butter)
  + 80 kg flour in storage
  + Wholesale orders (pre-packed)

**Immediate Impact:**

* **Over-proofed dough:** All 150 loaves in retarder have continued fermenting at warm temp (8 hours at 65°F)
  + Loaves are likely over-proofed, may collapse if baked
  + **Estimated loss:** 150 loaves x $2.00 COGS = $300 + lost revenue ~$1,200
* **Dairy spoilage:** Milk and butter at 65°F for 8 hours
  + **FDA food safety:** Perishables above 40°F for >2 hours must be discarded
  + **Loss:** $150 dairy value
* **Flour:** Unaffected (dry good, temperature insensitive)

**Response Protocol:**

1. **4:00 AM Discovery (Marcus arrival):**
   * Notice warm temperature on walk-in door display
   * Immediately assess dough (poke test all loaves)
   * Call refrigeration repair service (24-hour emergency line)
2. **Dough triage:**
   * **Salvageable:** Some loaves may be usable if caught early
     + Bake immediately (no additional proof needed)
     + Shape may be flat, quality degraded (sell at discount or donate)
   * **Lost:** Collapsed dough discarded (compost)
3. **Dairy disposal:**
   * **All dairy discarded** (food safety protocol, cannot risk)
   * Emergency purchase: Marcus drives to restaurant supply store (opens 6:00 AM)
   * Purchase 20 lbs butter, 10 gallons milk (enough for day's sandwich loaves)
   * **Cost:** ~$175 emergency purchase (higher than wholesale)
4. **Production adjustment:**
   * **No sourdough production Saturday** (starter was in walk-in, may be affected)
   * Focus on: Baguettes, Focaccia (minimal cold storage needed)
   * Ramp up baguette production to 75 (vs. 50) to compensate for lost sourdough revenue
5. **Customer communication:**
   * Sign in store: "Limited sourdough today due to equipment issue"
   * Instagram post: "Today's special: Extra baguettes!"
   * Frame positively (not apologetic) - customers appreciate transparency

**Cost of Event:**

* Lost sourdough production: ~$1,050 revenue (wholesale + retail)
* Wasted COGS (dough): $510
* Dairy disposal: $255
* Emergency dairy purchase: $298
* Refrigeration repair: $600-1,200 (compressor replacement)
* **Total impact:** ~$2,663-3,263

**Prevention/Mitigation:**

* **Temperature alarm system:**
  + **Currently:** Walk-in has audible alarm (sounds if temp > 45°F)
  + **Gap:** Alarm only audible in bakery (no remote alert)
  + **Recommended upgrade:** Internet-connected sensor with SMS alerts to Marcus's phone
  + **Cost:** $150-250 (worth it for peace of mind)
* **Insurance:** Equipment breakdown insurance covers major repairs (Parkside has this)

**SCENARIO #3: Staff No-Show (Critical Position)**

**Event:** Rachel (Production Baker) calls in sick at 3:30 AM Saturday (stomach flu, cannot work)

* **Impact:** Rachel handles 80% of mixing, all baguette shaping, assists with bulk fermentation folds
* **Saturday production target:** 250 loaves (peak day)

**Immediate Impact:**

* **Cannot produce at full volume** with Marcus alone
* **Estimated production:** 60-70% of normal (150-175 loaves)
* **Lost revenue:** ~$600-700

**Response Protocol:**

1. **3:30 AM - Marcus receives call:**
   * Assess: Can David arrive earlier? (Call David at 3:35 AM)
   * David available: Yes, can arrive by 4:30 AM (1 hour earlier than normal)
2. **Revised Production Plan:**
   * **Eliminate:** Specialty breads (Olive & Rosemary, Rye) - skip for the day
   * **Reduce:** Multigrain from 30 to 15 loaves
   * **Maintain:** Country Sourdough (customer expectation), Baguettes (high demand)
   * **New target:** 180 loaves (vs. 250)
3. **Task reallocation:**
   * **Marcus:** Focus on mixing, oven management (cannot be delegated)
   * **David (4:30 AM arrival):** Bulk fermentation folds, baguette shaping (trained backup)
   * **Trade-off:** Baguette quality may be lower (David less experienced), acceptable for emergency
4. **Customer management:**
   * **Expectation:** Many customers will arrive expecting full selection, won't find it
   * **Sarah (FOH):** Brief each customer: "Short-staffed today, limited selection, apologies"
   * **Discount strategy:** Offer 10% off all purchases as apology (goodwill gesture)
   * **Social media:** NO public post (don't advertise weakness, handle in-store quietly)
5. **Sunday prep:**
   * **Problem:** Rachel typically shapes Sunday's loaves on Saturday afternoon (retard overnight)
   * **Solution:** Marcus and David stay late Saturday (until 3:00 PM) to shape Sunday's loaves
   * **Overtime cost:** David's OT (3 hours x $27/hr time-and-a-half) = $81

**Cost of Event:**

* Lost revenue: $600-700 (estimate)
* Overtime for David: $81
* 10% discount (goodwill): ~$180 (10% of Saturday retail sales)
* **Total impact:** ~$861-961

**Prevention/Mitigation:**

* **Cross-training:** Critical (David can cover 70% of Rachel's responsibilities)
  + **Ongoing:** Weekly skill-building (David practices baguette shaping each Thursday)
* **Backup labor pool:**
  + **Gap:** No on-call part-time baker currently
  + **Recommendation:** Establish relationship with 1-2 experienced local bakers (freelance) who can be called for emergency shifts
  + **Cost:** $25/hr for experienced backup (premium for short notice)
* **Sick day policy:**
  + Staff required to call by 3:00 AM if unable to work (gives Marcus 1 hour to adjust plan)
  + Paid sick days (3 per year) to incentivize early notification (not calling out at last second)

**SCENARIO #4: Major Ingredient Shortage (Flour Delivery Delayed)**

**Event:** Tuesday morning, regular flour delivery truck breaks down en route, delivery delayed 3 days

* **Current flour inventory:** 80 kg bread flour, 20 kg whole wheat (enough for 1 day)
* **Weekly flour need:** 623 kg
* **Impact:** Cannot produce Wed-Thu-Fri without flour

**Immediate Impact:**

* **Lost production:** 3 days = ~550 loaves
* **Lost revenue:** ~$3,900
* **Wholesale orders:** Cannot fulfill (breach of informal agreements)

**Response Protocol:**

1. **Tuesday 8:00 AM - Discovery:**
   * Distributor calls: "Truck issue, cannot deliver until Friday"
   * Marcus evaluates options
2. **Emergency sourcing:**
   * **Option A:** Purchase from local restaurant supply store
     + **Available:** 200 kg (enough for 2 days)

* **Cost:** $2.38/kg (vs. $1.28/kg wholesale) - 86% markup
  + **Total emergency cost:** 200 x $2.38 = $476 (vs. $256 normal) = **$220 premium**
  + **Option B:** Borrow from nearby bakery (if willing)
    - Call colleague at bakery 8 miles away
    - Offer to reciprocate in future
    - **Available:** 100 kg (enough for 1 day)
  + **Option C:** Reduce production, prioritize high-margin items
    - Focus on: Focaccia (low flour per portion), Baguettes (fast turnover)
    - Skip: Sandwich loaves (high flour usage, lower margin)

1. **Chosen strategy: Combination**
   * **Tuesday:** Use existing 100 kg, produce normal volume
   * **Wednesday:** Purchase 200 kg from restaurant supply, borrow 100 kg from colleague
   * **Thursday:** Purchase another 200 kg from restaurant supply
   * **Friday:** Regular delivery arrives (resume normal operations)
2. **Customer communication:**
   * **Wholesale:** Call partners Wed AM: "Limited availability Wed-Thu, full orders resume Friday"
   * **Retail:** Signage: "Limited selection Wed-Thu - thank you for your patience"
3. **Financial impact:**
   * Emergency flour purchases: $952 (vs. $512 normal) = **$440 premium**
   * Reduced wholesale fulfillment: ~$400 lost revenue (orders delayed)

* **Total impact:** ~$840

**Prevention/Mitigation:**

* **Larger flour inventory:** Increase base inventory from 80 kg to 200 kg (covers 2-3 days)
  + **Trade-off:** More storage space needed, slight quality degradation with age
  + **Cost:** No additional cost (just order more per delivery)
* **Backup supplier:** Establish relationship with second distributor (alternative source)
  + **Currently:** Single-source dependency (risk)
  + **Recommendation:** Add secondary supplier, use for 20% of orders (maintain relationship)

**SCENARIO #5: Health Department Inspection (Unannounced)**

**Event:** Wednesday 10:00 AM, Health Department inspector arrives (routine annual inspection)

* **Required:** Immediate pause of production, walk-through inspection, review of records

**Immediate Impact:**

* **Production halt:** All food prep stops during inspection (1-2 hours)
* **Lost time:** Cannot complete 10:00 AM - 12:00 PM tasks (ciabatta shaping, sandwich loaf bake)
* **If violations found:** Potential fines, mandatory corrective actions, follow-up inspection

**Response Protocol:**

1. **10:00 AM - Inspector arrives:**
   * Marcus greets inspector, provides requested documentation:
     + Food safety certification (ServSafe, current)
     + Temperature logs (refrigeration, oven)
     + Supplier invoices (trace ingredients)
   * Production staff pauses all work, steps away from benches
2. **Inspection focus areas:**
   * **Food storage:** Walk-in temps (should be < 40°F), labeling, FIFO (first in, first out)
   * **Cross-contamination:** Separate areas for raw/cooked, handwashing stations functional
   * **Personal hygiene:** Staff wearing hairnets, clean aprons, no jewelry
   * **Cleaning protocols:** Sanitizer concentration (test strips), 3-compartment sink setup
   * **Pest control:** No evidence of rodents, insects (traps in place, bait stations)
3. **Typical findings (minor violations common):**
   * **Example:** 1 mis-labeled container (date missing on bulk flour)
   * **Example:** Handwashing sign not visible at one station
   * **Corrective action:** Immediate
4. **Inspection outcome scenarios:**

**Scenario A: Pass with Minor Violations**

* **Rating:** 95/100 points (excellent)
* **Action:** Correct minor issues immediately during inspection
* **Follow-up:** None required
* **Impact:** 2-hour production delay, resume at 12:00 PM
* **Cost:** Minimal (lost productivity ~$150)

**Scenario B: Pass with Major Violations**

* **Rating:** 75/100 points (marginal)
* **Example violations:**
  + Refrigerator temp at 44°F (above 40°F limit)
  + Missing HACCP plan documentation
  + Improper cooling procedure for one product
* **Action:** Written corrective action plan required (submitted within 14 days)
* **Follow-up:** Re-inspection in 30 days ($150 fee)
* **Impact:** 2-hour delay + administrative burden (10 hours Marcus's time)
* **Cost:** $150 re-inspection + $400 labor (Marcus time) = $550

**Scenario C: Fail (Critical Violations)**

* **Rating:** <70/100 points
* **Example violations:**
  + Evidence of rodent activity
  + No hot water in handwashing station
  + Serious food safety violation (e.g., raw meat stored above ready-to-eat food)
* **Action:** IMMEDIATE CLOSURE until violations corrected
* **Follow-up:** Re-inspection required to reopen (within 24-48 hours)
* **Impact:** Lost revenue for 1-2 days (~$2,500-5,000)
* **Cost:** Extreme (potential business-ending if prolonged)

1. **Best practices for inspection readiness:**
   * **Daily self-audits:** Rachel performs 5-minute checklist each morning
     + Temps logged
     + Labels checked
     + Cleaning supplies stocked
   * **Mock inspections:** Quarterly, Marcus does full walk-through (uses official inspection form)
   * **Staff training:** Annual food safety refresher (all staff ServSafe certified)
   * **Documentation:** All logs kept for 1 year (proves historical compliance)

**Prevention/Mitigation:**

* **Current status:** Parkside has excellent track record (last 2 inspections: 96, 98 scores)
* **Key success factor:** Marcus's experience (knows what inspectors look for)
* **Insurance:** General liability insurance includes some coverage for health department issues

**SCENARIO #6: Key Employee Resignation (Rachel Gives 2-Week Notice)**

**Event:** Rachel announces she's moving out of state in 3 weeks, last day will be Friday, 3 weeks from now

**Immediate Impact:**

* **Loss of primary production baker** (handles 60% of hands-on production)
* **Institutional knowledge loss:** Rachel knows all recipes by heart, troubleshoots dough issues
* **Timeline pressure:** 3 weeks to hire and train replacement (tight)

**Response Protocol:**

**Week 1: Assess and Recruit**

1. **Day 1 (Rachel's notice):**
   * Marcus meets with Rachel: Understand reason (can anything change her mind? No - spouse's job transfer)
   * Discuss transition plan: Rachel agrees to help train replacement
2. **Day 2-3: Job posting:**
   * Post to local job boards:
     + Indeed, Craigslist, local culinary school job board
   * **Requirements:**
     + 2+ years professional baking experience
     + Sourdough experience preferred
     + Available 4:30 AM start time
     + Physical stamina (lifting 50 lbs, standing 8+ hours)
   * **Compensation:** $19.50-21.00/hour (match or exceed Rachel's rate to attract talent)
   * **Response:** Expect 10-15 applications over 5 days
3. **Day 4-7: Screen and interview:**
   * Phone screen top 5 candidates
   * In-person working interview with top 3:
     + Candidate comes in for 4-hour paid trial shift
     + Works alongside Rachel, shapes dough, demonstrates skills
     + Marcus assesses: technique, speed, cultural fit, reliability
   * Select top candidate, make offer

**Week 2: Onboarding and Training**

1. **New hire: Emma (selected candidate):**
   * Experience: 3 years at wholesale bakery, sourdough production
   * Start date: Monday of Week 2 (overlaps 2 weeks with Rachel)
   * Rate: $20.00/hour
2. **Training structure:**
   * **Week 2:** Emma shadows Rachel full-time (learns workflow, recipes, equipment)
     + Monday-Wednesday: Observation, take notes
     + Thursday-Friday: Hands-on with Rachel supervising
   * **Documentation:** Marcus creates written SOPs for all core tasks (should have been done earlier)

**Week 3: Transition**

1. **Emma takes increasing responsibility:**
   * Monday-Wednesday: Emma leads, Rachel assists/corrects
   * Thursday-Friday: Emma solo on most tasks, Rachel available for questions
2. **Friday (Rachel's last day):**
   * Team goodbye lunch (Marcus provides)
   * Final knowledge transfer: "Here's what I wish I'd told you..."

**Week 4 and Beyond: Post-Transition**

1. **Emma solo (with Marcus oversight):**
   * Expect reduced productivity first 2-3 weeks (learning curve)
   * Estimated efficiency: 75% of Rachel's speed initially
   * Adjust production targets down 10-15% temporarily
2. **Quality monitoring:**
   * Marcus more hands-on first month (closer QC checks)
   * Expect some product inconsistency (acceptable during learning period)

**Cost of Event:**

* **Overlapping labor:** 2 weeks Emma + Rachel working simultaneously
  + Extra cost: $3,200 (80 hours x $20/hr for Emma while Rachel also being paid)
* **Reduced productivity:** First month post-transition
  + Lost revenue: ~$800 (10% reduction x 4 weeks)
* **Training time:** Marcus's time (40 hours)
  + Opportunity cost: $600 (Marcus not doing other tasks)
* **Total impact:** ~$4,600

**Prevention/Mitigation:**

* **Succession planning:** Always be training backups (David should be 80% capable of Rachel's role)
* **Documentation:** Written SOPs reduce dependency on individual knowledge
* **Competitive compensation:** Pay market rate to reduce turnover risk
* **Culture/retention:** Marcus should check in regularly with all staff (identify dissatisfaction early)

**Current gap:**

* **FLAG:** Parkside does not have written SOPs for all processes (relies on institutional knowledge)
* **Recommendation:** Marcus should document all core recipes and procedures (10-15 hours investment)

**APPENDIX: Summary of Critical Assumptions and Gaps**

Throughout this operational model, several assumptions were necessary where specific data was unavailable. These are flagged for transparency:

**ASSUMED - Equipment & Facilities:**

* Rental rate ($1.83/sq ft) based on typical suburban commercial rates
* Friction factor for mixer (22°F) based on typical spiral mixer performance
* Walk-in cooler temp recovery time and duty cycle percentages

**ASSUMED - Financial:**

* Organic flour percentage (60/40 blend) based on artisan bakery positioning
* Wholesale distributor pricing for dairy ($2.55/liter milk, $12.75/kg butter)
* Flour wholesale pricing ($1.19-2.21/kg depending on type) reflects 20% discount from market rates due to long-term supplier relationships
* Card transaction percentage (80% card, 20% cash)
* Seasonality revenue percentages (+15-20% peak, -10-15% slow)
* Tax treatment for food donation (IRS guidelines)

**ASSUMED - Operations:**

* Starter maintenance waste is negligible (used for experiments)
* Average transaction value ($18.50 retail) extrapolated from product mix
* Customer volume (800 retail transactions/week) calculated from revenue ÷ transaction value
* Health department inspection cycle and scoring system

**IDENTIFIED GAPS (Current Business Vulnerabilities):**

1. **No backup commercial kitchen identified** for emergency oven failure (critical gap)
2. **No remote temperature monitoring** for walk-in cooler (SMS alerts recommended)
3. **No on-call backup labor pool** established (freelance bakers for emergencies)
4. **Single-source flour supplier** (should establish backup relationship)
5. **No written SOPs** for core processes (institutional knowledge risk)
6. **Limited equipment redundancy** (only 1 oven, 1 mixer - any failure is critical)

**RECOMMENDED IMMEDIATE ACTIONS:**

**Priority 1 (High Impact, Low Cost):**

* Establish backup supplier relationships (flour, dairy) - $0, 5 hours time
* Document core recipes and SOPs - $0, 15 hours Marcus time
* Install remote temperature monitoring - $250 one-time + $10/month

**Priority 2 (High Impact, Moderate Cost):**

* Purchase 2 additional cooling racks - $370
* Build on-call baker network (2-3 contacts) - $0, relationship building
* Increase base flour inventory to 200 kg - $0, just order pattern change

**Priority 3 (Moderate Impact, High Cost):**

* Add 2nd retarder unit - $1,500-2,500 (planned 2026)
* Add 4th oven deck or 2nd oven - $6,000-18,000 (requires capital planning)

**CONCLUSION: Parkside Bakery as a Functioning System**

Parkside Bakery represents a mature, efficiently-run artisan bread operation that has achieved strong financial performance (23% net profit margin) while maintaining quality and work-life balance for its 4-person team. The bakery's success is attributable to several key factors:

**Operational Strengths:**

1. **Strategic product mix:** Balance of high-margin items (focaccia, specialty sourdough) with volume drivers (baguettes, sandwich loaves)
2. **Cold fermentation mastery:** Effective use of retardation decouples production from baking, enabling manageable schedules
3. **Lean staffing model:** 4 employees producing $450K revenue = $112K revenue per FTE (excellent productivity)
4. **Efficient COGS:** 18.0% ingredient cost (vs. 25-35% industry average) through careful sourcing and minimal waste

**Current Constraints:**

1. **Saturday oven capacity:** Operating at 95% capacity, cannot grow weekend sales without equipment investment
2. **Retarder capacity:** 200-loaf limit caps production flexibility
3. **Single points of failure:** No equipment redundancy creates vulnerability to breakdowns
4. **Knowledge concentration:** Heavy reliance on Marcus's expertise and experience

**Growth Opportunities:**

1. **Mid-week capacity:** Weekday oven utilization only 60-70%, room to grow wholesale accounts
2. **Online ordering:** Currently limited, could develop subscription model (as seen in case study research)
3. **Extended product line:** Wholesale-focused items (par-baked, frozen dough) could add revenue with existing capacity
4. **Second location:** Proven model could be replicated (requires significant capital)

**Risk Mitigation Priorities:** As identified in the gaps analysis, the most critical vulnerabilities are equipment failure scenarios and key person dependency. The recommendations in this report provide a roadmap for addressing these risks at modest cost.

**Realism Check:** This model represents a best-case scenario for a small artisan bakery:

* Strong owner-operator with 15 years experience
* Favorable suburban rent
* Excellent product-market fit
* Minimal startup debt
* Efficient team with low turnover

A less experienced operator, higher rent location, or different market conditions could easily reduce net profit margin from 23% to 10-12% (still viable but much tighter). The financial model here should be viewed as an aspirational target, not a guaranteed outcome.

**Simulation Utility:** This operational model provides the granular detail necessary to build a realistic bakery simulation, including:

* Time-dependent processes (fermentation, baking, cooling)
* Resource constraints (oven capacity, retarder space, cooling racks)
* Financial sensitivity (COGS, labor, pricing)
* Failure modes and their cascading effects
* Decision points and trade-offs (quality vs. volume, retail vs. wholesale)

The model is comprehensive enough to simulate day-to-day operations, test "what-if" scenarios (e.g., "What if we increase Saturday production by 20%?"), and explore strategic decisions (e.g., "Should we invest in a second oven or accept capacity constraints?").