Biomass Open Origin Standard for Tracking (BOOST) Data Standard

Executive Summary for California Department of Food and Agriculture

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1 Overview

The Biomass Open Origin Standard for Tracking (BOOST) is a comprehensive data standard developed by the W3C Community Group to enable transparent, verifiable tracking of biomass materials through supply chains. BOOST supports CDFA's mission to protect and promote California agriculture by providing standardized frameworks for agricultural biomass utilization while ensuring food security and sustainable farming practices.

2 Key Potential Benefits for CDFA

Software and data-powered tools that incorporate BOOST have the potential to support CDFAs mission more efficiently and effectively.

2.1 Agricultural Biomass Optimization with Privacy Protection

- **Food vs. Fuel Clarity**: BOOST's Material and ProductGroup entities provide clear classification systems to distinguish food crops from fuel feedstocks, supporting CDFA's food security mission with automated policy compliance checking
- **Waste Stream Valorization**: Comprehensive tracking of agricultural residues and waste streams enables better utilization and economic opportunities for farmers while protecting commercially sensitive information
- **Supply Chain Transparency**: Complete visibility into agricultural biomass markets supports informed policy decisions and market development through aggregated, privacy-protected data
- **Privacy-First Design**: Field-level data masking and embargoes protect farmer competitive sensitivities while enabling necessary regulatory oversight

2.2 Enhanced Regulatory Coordination

- **Unified Reporting**: Standardized data collection reduces reporting burden for agricultural producers across multiple state programs, eliminating current manual reconciliation across agency portals
- **Cross-Agency Integration**: Shared data infrastructure improves coordination with environmental and energy agencies through secure API connections while maintaining agricultural data sovereignty
- **Policy Impact Assessment**: Real-time data enables evidence-based policy development and impact evaluation with robust privacy controls ensuring farmer participation
- **Streamlined Compliance**: Single data entry supporting multiple regulatory requirements (CARB LCFS, CPUC BioRAM, CalRecycle RDRS)

2.3 Rural Economic Development with Privacy Protection

- **Market Access**: Transparent supply chains facilitate market access for agricultural biomass producers while protecting commercially sensitive pricing and volume data through tiered disclosure models
- **Value Chain Analysis**: Comprehensive tracking enables economic impact assessment and value chain optimization using aggregated, privacy-protected data
- **Producer Support**: Simplified reporting and certification processes reduce administrative burden for farmers through single data entry supporting multiple regulatory requirements
- **Competitive Protection**: Field-level access controls ensure agricultural producers maintain competitive advantages while participating in biomass markets

3 Current CDFA Engagement

Active Participants:

- Nina Bingham (Mailing List Participant)

Engagement Level: Medium - CDFA is receiving BOOST updates and participating in community discussions with opportunity for increased technical involvement focused on agricultural privacy requirements and producer protection frameworks.

4 BOOST Entities Relevant to CDFA Programs

4.1 Material Entity - Agricultural Biomass Classification

```
{
  "materialType": "Agricultural Residue",
  "species": "Zea mays (Corn)",
  "category": "Non-food biomass",
  "source": "Post-harvest residue",
  "quantity": {"value": 500, "unit": "tons"},
  "countryOfOrigin": "California Central Valley"
}
```

CDFA Application: Clear classification of agricultural materials with food vs. fuel designation and integration with existing commodity tracking systems, supporting automated policy compliance checking while protecting farmer data sovereignty.

4.2 Supplier Entity - Producer Verification with Privacy Controls

```
{
  "supplierName": "Sustainable Farms Cooperative",
  "address": "123 Farm Road, Fresno, CA",
  "certificateCode": "USDA-Organic-CA-2025",
  "supplierType": "Certified Organic Producer"
}
```

CDFA Application: Integration with existing producer registration and certification systems, including organic and sustainability programs, with robust privacy controls addressing CDFA emphasis on farmer data sensitivity.

4.3 SupplyBaseReport Entity - Agricultural Sustainability


```
{
  "preparationDate": "2025-03-31",
  "supplyBaseSummary": "1,200 acres certified organic corn production",
  "sourcingPractices": "Cover cropping, integrated pest management",
  "sustainabilityMeasures": "Soil carbon sequestration, water conservation"
}
```


CDFA Application: Streamlined sustainability reporting aligned with conservation programs and environmental stewardship initiatives, with configurable geospatial obfuscation to protect sensitive farm locations.

5 Program Alignment Opportunities

5.1 California Sustainable Agriculture Research and Education Program (SAREP)

- **BOOST Integration**: SupplyBaseReport entity supports comprehensive sustainability reporting with privacy-protected data aggregation
- **Benefit**: Standardized metrics for evaluating sustainable agriculture practices while maintaining farmer confidentiality
- **Impact**: Enhanced program effectiveness and farmer participation through reduced reporting burden and robust privacy controls

5.2 Organic Program and Certification

- **BOOST Integration**: Certificate and Supplier entities track organic certification status with field-level access controls
- **Benefit**: Simplified certification tracking and compliance monitoring while protecting competitive certification information
- **Impact**: Reduced administrative burden for organic producers through unified reporting system

5.3 Agricultural Marketing Programs

- **BOOST Integration**: Material and Transaction entities support market development with commercial data protection
- **Benefit**: Enhanced market transparency and access for agricultural biomass while protecting pricing and volume sensitivities
- **Impact**: Increased economic opportunities for California farmers through streamlined market access and reduced transaction costs

5.4 Conservation and Environmental Programs

- **BOOST Integration**: Cross-agency data sharing with environmental agencies using privacy-protected aggregated data
- **Benefit**: Coordinated conservation efforts and environmental monitoring while maintaining agricultural data sovereignty
- **Impact**: Improved environmental outcomes and policy coordination through unified data architecture eliminating duplicate reporting

6 Food Security and Sustainability Safeguards

6.1 Food vs. Fuel Protocols

- **Clear Classification**: Mandatory categorization of all materials as food, feed, or fuel
- **Policy Compliance**: Automated checking against food security policies
- **Market Monitoring**: Real-time tracking of agricultural commodity flows
- **Impact Assessment**: Regular evaluation of biomass utilization impacts on food systems

6.2 Sustainable Agriculture Support

- **Conservation Integration**: Alignment with conservation program requirements
- **Sustainability Metrics**: Comprehensive environmental impact tracking
- **Producer Support**: Technical assistance for sustainable practice adoption
- **Economic Viability**: Market development support for sustainable producers

7 Contact Information

BOOST Project Leadership:

- Peter Tittmann, Chair (ptittmann@carbondirect.com)
- Liam Kilroy, Technical Lead (lkilroy@carbondirect.com)
- Daniel Sanchez, Policy Liaison (dsanchez@carbondirect.com)

CDFA Stakeholder Contact:

- Nina Bingham (existing mailing list participant)

BOOST represents a unique opportunity for CDFA to enhance agricultural program effectiveness while supporting rural economic development and environmental stewardship. The framework's flexibility and focus on producer benefits ensures successful adoption while maintaining food security and sustainability priorities.