

A COALITION OF THE NATIONAL READY MIXED CONCRETE ASSOCIATION

Athena Institute EPD Tool

Progress: EPD Tools

• Athena

 Customized, plant specific calculator



Athena Sustainable Materials Institute

Climate Earth

Links Command Alkon production software with Climate Earth environmental impact data

Quantis / PCA tool
 – Launched August 2016





Athena's EPD Service Offering



EPD Service for ready-mixed concrete

- Developed a regionalized LCA/EPD Calculator tool to:
 - Streamline the EPD process
 - Provide cost effective solution
 - Added-value with "customer focused" attributes – auto benchmarking
- Tool based on NRMCA EPD v1 & v2
 - Incorporates previously verified data
- Easily set-up for a single plant or company with multiple plants in varying regions
- Can be further customized for vertically integrated companies – specific cement and/or quarry operation supply-chains

About the Institute

- Non-profit LCA consultancy and think tank.
- North American leader in construction-sector LCA.
- Working with forward-looking industries to measure and reduce their product footprints.
- Providing free software tools to architects and engineers, to reduce the footprint of buildings and roadways.
- Fee for service consulting:
 - LCAs, PCRs and EPD services
 - Verification services for EPD Program Operators
 - Life cycle policy analysis



Athena Impact Estimator for Buildings



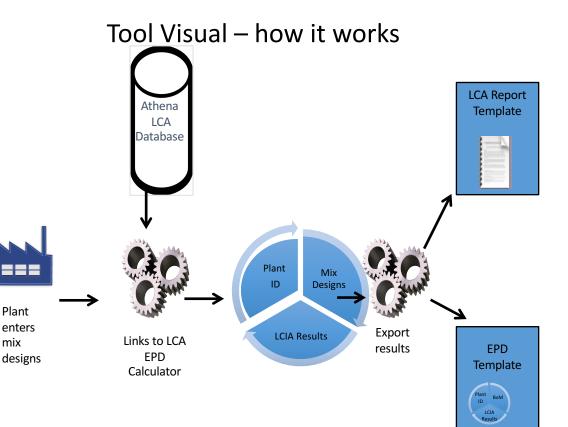
Environmenta **Other Cement and Concrete EPDs** Product NRMCA Declaration EPD Graniterock Precast/Prestressed **PCI** Concrete Institute .AFARGE Precast ... The Concrete Solution NORTH AMERICA **E**nvironmental **P**roduct Association LEHIGH Cement **D**eclaration Association Canadienne **HEIDELBERG**CEMENTGroup du Ciment of Canada \mathbb{M} covers 30 concrete mixes produced by 1 Environmental Tulsa, Oklahoma, NRMCA fulsa, Oklahoma Plant Product 431 West 23rd St. Tulsa, OK 74107 918-582-8111 Declaration PCA A cradle-to-gate EPD of five cement products according to ISO 14025 and ISO 21930 (/// ■ Type I ■ Type III ■ EcoMent Endure ® ■ Ec CANADIAN PRECAST/PRESTRESSED CONCRETE INSTITUTE CALPORTLAND **E**nvironmental Portland Cement Association INSTITUT CANADIEN DU BÉTON PRÉFABRIQUÉ ET PRÉCONTRAINT will JOTIGAD **P**roduct CAPITOL O TYPE **D**eclaration **CALPORTLAND**° CAPITOL 🚱 CAPITOL @ **CalPortland Company** CAPTOL O CA CAPITOL CCMPA Dupont, Duwamish & Tumwater WA Plants TYPEI CAPITOL OT **READY-MIXED CONCRETE** CI. CAPITOL 0 CANADIAN READY-MIXED CONCRETE ASSOCIATION CAPITOL 9 ASSOCIATION CANADIENNE DU BÉTON PRÉPARÉ NRMCA SSOCIATIC CERTIFIED **EPD**

Our EPD service process...

Institute sets-up your LCA/EPD tool

- If we already have your plant operating data, simple process....
- You enter the mix designs you want in your EPD
- We complete your initial LCA & EPD
- We facilitate 3rd-party verification of your LCA, EPD Calculator tool & EPD
- Now have company/plant specific EPD and verified EPD tool
- Thereafter we maintain your tool, but you can generate additional EPDs without the Institute via calculator tool & EPD template
- Brief tool demo.....







LCA EPD Results Calculator for NRMCA Members

Summary

- Customized tool for each company and plant(s)
 - Supply-chain specific cement and aggregates data can be added
- With Maintenance agreement background data updated annually
- NRMCA members can:
 - Enter and analyze any mix design and generate EPD results
 - Compare these to NRMCA regional industry average benchmarks identify "hotspots"
 - Demonstrate to customers how various mix designs can contribute to LEEDv4 credits
 - Share the results with your customers and provide "optimization credit" documentation
 - Create supplemental EPDs on their own in conjunction with the EPD Program Operator



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\$'s - what it all costs

Process steps	US\$
 Deliver company/plant specific LCA/EPD Tool If we have your plant(s) data already If we need to collect your plant data 	\$150/plant \$300/plant
 Complete company specific LCA background report and EPD (up to 50 mixes per plant) 	\$8,000/1 st plant \$1,000/additional plant
Anticipated LCA, EPD and Tool verification cost – paid to EPD PO (e.g., 3 plants x 50 mixes per plant – 150 mix designs	\$4,000/150 = \$27/mix design
Total Cost - 1 plant with 50 mix designs – verified EPD and Tool Total Cost - 3 plants with 50 mixes per plant – verified EPD and Tool	~ \$12,000 ~ \$14,000
3) Annual tool maintenance cost	\$125/plant
4) Generate supplementary mix design EPDs based on verified tool	\$0
Anticipated supplementary EPD verification cost based on verified tool (based on 3 plants and 30 mix designs/plant = 90 mix designs)	\$1250/90 = \$14/mix design
Note: verification costs estimated using NRMCA fee schedule	May vary

The Athena Sustainable Materials Institute Ottawa, ON, Canada and Kutztown, PA, USA

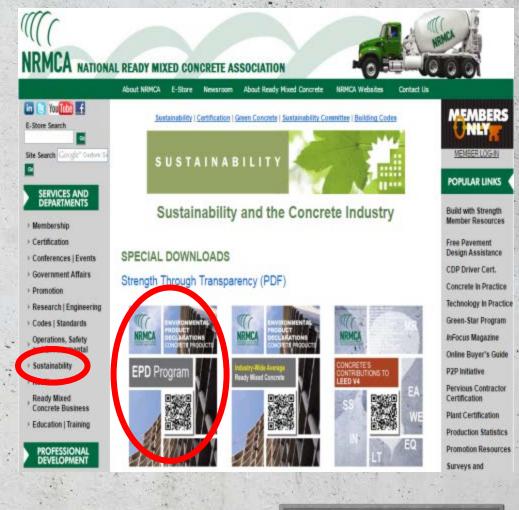
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Questions?



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