

BOARD OF DIRECTORS STATIONARY SOURCE COMMITTEE

COMMITTEE MEMBERS

JOHN GIOIA - CHAIR JOHN AVALOS SCOTT HAGGERTY LIZ KNISS ROD SINKS JIM SPERING – VICE CHAIRPERSON CAROLE GROOM DAVID E. HUDSON JAN PEPPER

MONDAY APRIL 18, 2016 10:30 A.M. 7TH FLOOR BOARD ROOM 939 ELLIS STREET SAN FRANCISCO, CA 94109

AGENDA

1. CALL TO ORDER - ROLL CALL - PLEDGE OF ALLEGIANCE

The Committee Chair shall call the meeting to order and the Clerk of the Boards shall take roll of the Committee members. The Committee Chair shall lead the Pledge of Allegiance.

2. PUBLIC COMMENT PERIOD

(Public Comment on Non-Agenda Items Pursuant to Government Code § 54954.3) Members of the public are afforded the opportunity to speak on any agenda item. All agendas for regular meetings are posted at District headquarters, 939 Ellis Street, San Francisco, CA, at least 72 hours in advance of a regular meeting. At the beginning of the regular meeting agenda, an opportunity is also provided for the public to speak on any subject within the Committee's subject matter jurisdiction. Speakers will be limited to three (3) minutes each.

This meeting will be webcast. To see the webcast, please visit http://www.baaqmd.gov/The-Air-District/Board-of-Directors/Agendas-and-Minutes.aspx at the time of the meeting.

Staff/Phone (415) 749-

3. APPROVAL OF THE MINUTES OF FEBRUARY 25, 2016 Clerk of the Boards/5073

The Committee will consider approving the draft minutes of the Stationary Source Committee meeting of February 25, 2016.

4. UPCOMING CHANGES TO REGULATION 9, RULE 13: CEMENT KILNS

J. Broadbent/5052

jbroadbent@baaqmd.gov

Staff will provide the Committee with an update about upcoming changes to Regulation 9, Rule 13: Cement Kilns.

5. AIR QUALITY IMPACTS OF CALIFORNIA'S ORGANIC WASTE DIVERSION REQUIREMENTS J. Broadbent/5052

jbroadbent@baaqmd.gov

Staff will provide the Committee with an overview of the solid waste industry.

6. PERMIT APPLICATON PUBLIC PARTICIPATION ENHANCEMENTS

J. Broadbent/5052

jbroadbent@baaqmd.gov

Staff will provide the Committee with an update on enhancements to the District's permit application programs in order to improve transparency and public participation in the evaluation of new and modified sources of air pollution.

7. **COMMITTEE MEMBER COMMENTS**

Any member of the Board, or its staff, on his or her own initiative or in response to questions posed by the public, may: ask a question for clarification, make a brief announcement or report on his or her own activities, provide a reference to staff regarding factual information, request staff to report back at a subsequent meeting concerning any matter or take action to direct staff to place a matter of business on a future agenda. (Gov't Code § 54954.2)

8. TIME AND PLACE OF NEXT MEETING

Wednesday, June 1, 2016, Bay Area Air Quality Management District Office, 939 Ellis Street, San Francisco, California 94109 at 9:30 a.m.

9. **ADJOURNMENT**

The Committee meeting shall be adjourned by the Committee Chair.

CONTACT:

MANAGER, EXECUTIVE OPERATIONS
939 ELLIS STREET, SAN FRANCISCO, CA 94109
mmartinez@baaqmd.gov

(415) 749-5016 FAX: (415) 928-8560 BAAQMD homepage: www.baaqmd.gov

- To submit written comments on an agenda item in advance of the meeting. Please note that all correspondence must be addressed to the "Members of the Mobile Source Committee" and received at least 24 hours prior, excluding weekends and holidays, in order to be presented at that Committee meeting. Any correspondence received after that time will be presented to the Committee at the following meeting.
- To request, in advance of the meeting, to be placed on the list to testify on an agenda item.
- Accessibility and Title VI: The Air District provides services and accommodations upon request to persons with disabilities and individuals who are limited-English proficient who wish to address Board matters. For accommodations or translations assistance, please call 415-749-5016 at least three days in advance of a meeting, so that arrangements can be made accordingly.

Accesibilidad y Titulo VI: El Distrito del Aire ofrece servicios y realiza las adaptaciones necesarias para las personas con discapacidades y para las personas con un dominio limitado del inglés siempre que estos servicios se soliciten y se deseen tratar asuntos relacionados con la Junta. Si necesita ayuda con algún tipo de adaptación o traducción, llame al 415-749-5016 como mínimo tres días antes de la reunión de manera que puedan realizarse las adaptaciones necesarias.

Magagamit na Tulong at Titulo VI: Nagbibigay ang Air District ng mga serbisyo at mga akomodasyon, kapag hiniling, sa mga taong may kapansanan at mga taong limitado ang kakayahan sa Ingles na gustong magpahayag tungkol sa mga usapin sa harap ng Lupon. Para sa mga tulong sa akomodasyon o sa pagsasalin, mangyaring tumawag sa 415-749-5016 nang tatlong araw man lamang na una pa sa miting, para makapaghanda ayon sa pangangailangan.

可及度及標題VI:空氣管理局根據申請為殘障人士和英語熟練程度有限但卻希望參與董事會事宜的人員提供服務和住宿。關於住宿或者翻譯幫助,請至少在會議之前三天致電 415-749-5016,以便作出相應安排。

Tạo Khả Năng Truy Cập và Chương VI: Đặc Khu cung cấp dịch vụ và phương tiện đáp ứng, khi có yêu cầu, cho những người bị khuyết tật và cho những cá nhân không thông thạo Anh ngữ muốn được tham gia các vấn đề của Hội Đồng. Để được phương tiện đáp ứng hoặc trợ giúp phiên dịch, xin gọi số 415-749-5016 ít nhất ba ngày trước khi có hội thảo, để tiện bố trí các phương tiện

Any writing relating to an open session item on this Agenda that is distributed to all, or a majority of all, members of the body to which this Agenda relates shall be made available at the District's offices at 939 Ellis Street, San Francisco, CA 94109, at the time such writing is made available to all, or a majority of all, members of that body

BAY AREA AIR QUALITY MANAGEMENT DISTRICT 939 Ellis Street, San Francisco, California 94109 FOR QUESTIONS PLEASE CALL (415) 749-5016 or (415) 749-4941

EXECUTIVE OFFICE: MONTHLY CALENDAR OF AIR DISTRICT MEETINGS

APRIL 2016

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Executive Committee (Meets on the 3 rd Monday of each Month) - CANCELLED	Monday	18	9:30 a.m.	Board Room
Board of Directors Stationary Source Committee (Meets on the 3 rd Monday of each Month)	Monday	18	10:30 a.m.	Board Room
Board of Directors Regular Meeting (Meets on the 1 st & 3 rd Wednesday of each Month)	Wednesday	20	9:45 a.m.	Board Room
Advisory Council Meeting (At the Call of the Chair)	Monday	25	10:00 a.m.	Board Room
Board of Directors Budget & Finance Committee (Meets on the 4 th Wednesday of each Month)	Wednesday	27	9:30 a.m.	Board Room
Board of Directors Mobile Source Committee (Meets on the 4th Thursday of each Month) - CANCELLED	Thursday	28	9:30 a.m.	Board Room

MAY 2016

TYPE OF MEETING	DAY	DATE	TIME	<u>ROOM</u>
Board of Directors Public Engagement Committee (At the Call of the Chair)	Monday	2	9:30 a.m.	Board Room
Board of Directors Regular Meeting (Meets on the 1 st & 3 rd Wednesday of each Month) - CANCELLED	Wednesday	4	9:45 a.m.	Board Room
Board of Directors Mobile Source Committee (Meets on the 4th Thursday of each Month)	Thursday	5	9:30 a.m.	Board Room
Board of Directors Executive Committee (Meets on the 3 rd Monday of each Month)	Monday	16	9:30 a.m.	Board Room
Board of Directors Stationary Source Committee (Meets on the 3 rd Monday of each Month) - CANCELLED & RESCHEDULED TO WEDNESDAY, JUNE 1, 2016 AT 9:30 A.M.	Monday	16	10:30 a.m.	Board Room
Board of Directors Ad Hoc Building Oversight Committee (At the Call of the Chair)	Wednesday	18	9:30 a.m.	Board Room
Board of Directors Regular Meeting (Meets on the 1 st & 3 rd Wednesday of each Month)	Wednesday	18	9:45 a.m.	Board Room

MAY 2016

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Climate Protection Committee (Meets on the 3 rd Thursday of every other month) - CANCELLED	Thursday	19	9:30 a.m.	Board Room
Board of Directors Budget & Finance Committee (Meets on the 4 th Wednesday of each Month) - CANCELLED	Wednesday	25	9:30 a.m.	Board Room
Board of Directors Mobile Source Committee (Meets on the 4th Thursday of each Month) - CANCELLED	Thursday	26	9:30 a.m.	Board Room

JUNE 2016

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Regular Meeting (Meets on the 1st & 3rd Wednesday of each Month) - CANCELLED	Wednesday	1	9:45 a.m.	Board Room
Board of Directors Stationary Source Committee (Meets on the 3 rd Monday of each Month)	Wednesday	1	9:30 a.m.	Board Room
Board of Directors Regular Meeting (Meets on the 1 st & 3 rd Wednesday of each Month)	Wednesday	15	9:45 a.m.	Board Room
Board of Directors Executive Committee (Meets on the 3 rd Monday of each Month)	Monday	20	9:30 a.m.	Board Room
Board of Directors Stationary Source Committee (Meets on the 3 rd Monday of each Month)	Monday	20	10:30 a.m.	Board Room
Board of Directors Budget & Finance Committee (Meets on the 4 th Wednesday of each Month)	Wednesday	22	9:30 a.m.	Board Room
Board of Directors Mobile Source Committee (Meets on the 4th Thursday of each Month)	Thursday	23	9:30 a.m.	Board Room

HL - 4/12/16 (11:50 a.m.)

G/Board/Executive Office/Moncal

Memorandum

To: Chairperson John Gioia and Members

of the Stationary Source Committee

From: Jack P. Broadbent

Executive Officer/Air Pollution Control Officer

Date: April 8, 2016

Re: Approval of the Minutes of February 25, 2016

RECOMMENDED ACTION

Approve the attached draft minutes of the Stationary Source Committee (Committee) meeting of February 25, 2016.

DISCUSSION

Attached for your review and approval are the draft minutes of the Committee meeting of February 25, 2016.

Respectfully submitted,

Jack P. Broadbent Executive Officer/APCO

Prepared by: <u>Tom Flannigan</u>
Reviewed by: <u>Maricela Martinez</u>

Attachment: Draft Minutes of the Committee Meeting of February 25, 2016

Draft Minutes – Stationary Source Committee Meeting of February 25, 2016

Bay Area Air Quality Management District 939 Ellis Street San Francisco, California 94109 (415) 749-5073

DRAFT MINUTES

Summary of Board of Directors Stationary Source Committee Meeting Thursday, February 25, 2016

1. CALL TO ORDER – ROLL CALL

Stationary Source Committee (Committee) Chairperson John Gioia called the meeting to order at 11:08 a.m.

Present: Committee Chairperson John Gioia; Vice-Chairperson James Spering; and

Directors John Avalos, Carole Groom, Scott Haggerty, David Hudson, Jan

Pepper, and Rod Sinks.

Absent: Director Liz Kniss.

Also Present: Board Chairperson Eric Mar.

2. PUBLIC COMMENT ON NON-AGENDA MATTERS

Andres Soto, Benicians for a Safe and Healthy Community, addressed the Committee against crude by rail projects in the Bay Area, stating that there is a strong opposition in the community for these types of projects in the region.

3. APPROVAL OF THE MINUTES OF FEBRUARY 1, 2016

Committee Comments: None.

Public Comments: No requests received.

Committee Action:

Director Hudson made a motion, seconded by Director Sinks, to approve the Minutes of February 1, 2016; and the motion carried by the following vote of the Committee:

AYES: Avalos, Groom, Haggerty, Hudson, Sinks, Spering, Gioia and Mar.

NOES: None. ABSTAIN: None.

ABSENT: Kniss and Pepper.

4. SAFETY AND SECURITY OF RULE 8-18 IMPLEMENTATION

Staff addressed the Committee in response to issues raised regarding Regulation 8, Rule 18 (8-18): Equipment Leaks. Staff discussed document control for piping and instrumentation diagrams (P&IDs); security measures to protect information; safety concerns; alternative emissions reductions plans; valve controls and approvals; and addressing safety concerns.

NOTED PRESENT: Director Pepper was noted present at 11:17 a.m.

Public Comments:

Laurie Mintzer, Chevron, addressed the Committee to speak against the requirements of 8-18, describing safety concerns at refineries due to the rule and asking that the rule be rewritten to address safety and confidentiality concerns brought by refineries.

Committee Comments:

The Committee and Staff discussed safety concerns for District staff and refinery workers; equipment testing and troubleshooting; new requirements from the District for refinery monitoring equipment; diagram procedures; document security; and implementation issues for the new rule.

Committee Action: None.

5. UPDATE ON REGULATION 12, RULE 16 ALTERNATIVES (12-16)

Jack Broadbent, Executive Officer/Air Pollution Control Officer (APCO), introduced the topic, provided an update on development of the new rule and addressed concerns raised by the public. Mr. Broadbent then introduced Victor Douglas, Principal Air Quality Engineer, who gave the staff presentation *Update on Regulation 12, Rule 16 Alternatives* including an overview; refinery impacts and issues; an update on the refinery strategy including background and progress, proposed criteria pollutants and toxic air contaminant reductions; options for GHG redcutions for Rule 12-16; criteria for evaluating the options; and stakeholder process.

Committee Comments:

Committee and Staff discussed new OEHHA guidance implementation, how rules are applied to permit applications, and the process for handling risk management evaluations.

Committee and Staff discussed the next time the Committee would be updated on 12-16; different options for GHG reductions; timeline for implementation of those options; staff time on refinery rule making; processes and implementation of newly adopted refinery rules; and refinery litigation.

Public Comment:

Andres Soto, Benicians for a Safe and Healthy Community, addressed the Committee regarding rule 12-15 and 9-14 (coke calcining) and AB 32 funds. He also expressed concern about health implications for the community near the coke calcining plant.

David McCoard, Sierra Club, addressed the Committee in favor of adopting strong regulation 12-16 with enforceable caps.

Ratha Lai, Sierra Club, addressed the Committee regarding GHGs being included in refinery rules, the coke calcining rule; sulfur dioxide pollution; pet coke pollution; impacts from refineries; and inviting Board members on toxic tours.

Laurie Mintzer, Chevron, addressed the Committee regarding Chevron's Richmond refinery, Chevron's production of renewable geothermal energy, how the new rules require more energy use and are rendering the new GHG regulation ineffective.

Richard Gray, 350 Bay Area, addressed the Committee regarding the request for a firm hearing and decision schedule on 12-16; to seek a cap on refinery emissions; regarding refinery throughput amounts; to oppose additional Tar Sands crude oil in the Bay Area; and to request clarification on whether or not regional air districts are authorized to control the release of GHG emissions.

Nick Despota, a Richmond resident, addressed the Committee regarding the need for robust local regulations that can take effect quickly, as the health of fenceline communities remains at risk while waiting for global climate change regulations to be implemented; and to urge the District to adopt refinery specific emissions based on the community worker proposal for refinery-wide caps.

Eileen Boken, Sierra Club, addressed the Committee in support of Rule 12-16, capping emissions at current levels, and the District's commitment to proposed 2016 timelines regarding recommendations on Rules 12-16 and 12-15.

Janet Whittick, California Council for Environmental and Economic Balance, addressed the Committee regarding refinery rule development; and to praise the District's new Advisory Council's efforts regarding Rule 12-16.

Torm Nompraseurt, Asian Pacific Environmental Network, addressed the Committee regarding the need for the District to adopt a GHG emissions cap; and to urge the District to adopt a policy that would require all refinery permits to undergo a transparent community process.

Claire Broome, Professor of Public Health, addressed the Committee regarding the opportunity that the District has to collaborate with community and refinery workers in order to adopt refinery-wide enforceable and measureable caps on emissions; and to urge the District to commit to a hard timeline for Rule 12-16 and not allow any new permits until Rule 12-16 has been adopted.

Janet Johnson, Sunflower and Richmond Progressive Alliances, addressed the Committee regarding the capping of refinery pollution at present levels; to disclose refinery crude throughput; and to request that the District commits to a timeline regarding urgent regulation.

Steven Nadel, Sunflower Alliance, addressed the Committee regarding the need for the District's adoption of a firm and measureable cap on refinery emissions in 2016; to oppose more extreme crude slates and corresponding implications; and to urge the District to show California's national leadership in air quality.

Charles Davidson, Sunflower Alliance, addressed the Committee regarding a letter from the CARB stating that CARB, *not* the District, may rule significant GHG reductions to local refineries; and regarding the Attorney General's position on this matter, which states that renewable GHG caps are within the District's purview.

Chairperson Gioia clarified that the existing Cap & Trade Program is authorized to exceed 2020 under existing legislation, at 2020 target levels. Any increase in the targets beyond 2020 would have to be part of new legislation.

Roger Lin, Communities for a Better Environment, addressed the Committee regarding the desired acceleration of emissions reductions by way of Rule 12-16; to urge the District to not renege on its commitment to cap GHG emissions at the largest Bay Area stationary source emitters; and to seek District data that would adequately formulate the emission cap proposal for 2016 and result in the most protective rule possible.

Chairperson Gioia asked staff to explain the timeline for rule adoptions and Mr. Broadbent provided the following details and next steps: adoption of Rule 12-15 and Rule 9-14 to be considering by the Board in April 2016; present evaluation of options for Rule 12-16 to the Committee in May 2016; gather input from stakeholders and provide additional check-ins to the Committee in July and September 2016 as needed; aim for adoption of Rule 12-16 at the end of 2016.

6. COMMITTEE MEMBER COMMENTS:

The Committee and staff discussed how the New Source Review of GHG Permitting pertains to permit renewal and existing sources; GHG threshold in permitting; changes in crude slate and equipment triggering review under permitting requirements; the anticipated number of new and modified construction permits to which this review will apply; the District's position on imposing moratoriums on the issuance of permits; working with other California Air Districts to form a leakage solution; reduction of Toxic Air Contaminants (TAC) for continuous improvements; OEHHA changes; presentations that will be given at the April 25, 2016 Advisory Council meeting; potential options to limit refinery GHG emissions; the reliability of current equipment and technology to meet thresholds and rule-making objectives; health risk assessments and corresponding thresholds needed; refineries' concerns in response to the District's requirements; and easier accessibility to upcoming Advisory Council presentations and items regarding rulings.

7. TIME AND PLACE OF NEXT MEETING

Monday, April 18, 2016, Bay Area Air Quality Management District Headquarters, 939 Ellis Street, San Francisco, CA 94109 at 10:30 a.m.

8. ADJOURNMENT: The meeting adjourned at 12:44 p.m.

Tom Flannigan Clerk of the Boards

Memorandum

To: Chairperson John Gioia and Members

of the Stationary Source Committee

From: Jack P. Broadbent

Executive Officer/APCO

Date: April 4, 2016

Re: Upcoming Changes to Regulation 9, Rule 13: Cement Kilns

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

On September 12, 2012, the Board of Directors adopted Regulation 9, Rule 13: Nitrogen Oxides, Particulate Matter and Toxic Air Contaminants from Portland Cement Manufacturing, setting lower emission standards for nitrogen oxides (NOx), particulate matter (PM), and reducing risk from toxic air contaminants (TAC). The rule also contains a 10% opacity standard for miscellaneous operations at the facility and sets a number of operational requirements to reduce fugitive dust from quarrying, conveying and transport operations. The rule also contained requirements to reduce health risk that resulted in construction of a single, higher stack to replace 32 ground level emission points. The rule requirements became effective on September 9, 2013, at the one facility currently impacted, the Lehigh cement kiln in Cupertino.

The adoption of this rule has led to emissions reductions, reduced health risk, more accurate monitoring, improved dust mitigation and enhanced enforceability. However, the rule included emissions standards for ammonia that cannot be met due to large, unforeseen variations in ammonia concentration in the quarried rock used as feedstock.

DISCUSSION

Staff believes that changes to the baseline determination and averaging period contained in the ammonia standard will remedy the issue with the current ammonia limit and allow the entire rule to be incorporated into the facility's Title V permit, thereby becoming federally enforceable. However, there continue to be other areas of concern related to operations at the Lehigh facility in Cupertino. For example, the current rule does not address condensable PM and sulfur dioxide (SO₂) emissions, both of which may contribute to secondary formation of PM and visibility of the plume exiting the stack. As a result, the Air District is currently working to potentially address SO₂ and associated condensable PM emissions through its own rule development processes as well as through coordination with EPA. In addition, the Air District is currently

developing regulations that could reduce TAC emissions at the Lehigh facility, incorporating new California Office of Environmental Health Hazard Assessment (OEHHA) methodologies.

Air District staff are currently working with local stakeholders and Lehigh on all of these issues. An amendment to the rule to address the ammonia emissions limit is scheduled to be considered by the Board in the third quarter of 2016. A second phase of rule-making will address the other issues. This second round of amendments is anticipated to be considered by the Board in 2017. Staff will be in regular communication with the local stakeholders to receive their input on all remaining issues.

BUDGET CONSIDERATIONS/FINANCIAL IMPACT

None at this time.

Respectfully submitted,

Jack P. Broadbent Executive Officer/APCO

Prepared by: Robert Cave and Greg Nudd

Reviewed by: Eric Stevenson

Memorandum

To: Chairperson John Gioia and Members

of the Stationary Source Committee

From: Jack P. Broadbent

Executive Officer/APCO

Date: April 6, 2016

Re: Air Quality Impacts of California's Organic Waste Diversion Requirements

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

Since January 1, 2015, the Air District has received over 5,000 odor complaints from solid waste handling and processing facilities in the region. Sewage treatment plants, waste transfer facilities, solid waste disposal landfills and other waste treatment facilities are sources of volatile organic compounds, toxics, greenhouse gasses and odors that impact neighborhoods, the region, and the world. The solid waste industry is constantly changing to encourage recycling, reduce disposal of material in landfills and to reduce emissions.

DISCUSSION

Staff will present an overview of the solid waste industry. The discussion will include emission sources, monitoring activities and the role of the Air District in prevention and minimization of these emissions.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent Executive Officer/APCO

Prepared by: Wayne Kino Reviewed by: Jeff McKay

Memorandum

To: Chairperson John Gioia and Members

of the Stationary Source Committee

From: Jack P. Broadbent

Executive Officer/APCO

Date: April 4, 2016

Re: Permit Application Public Participation Enhancements

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

In an effort to enhance transparency and the ability of the public to make timely comments on permit applications for new and modified sources, the Air District is implementing updated webbased tools for the public to track permit application activity, and a 10-day public participation period.

DISCUSSION

The public participation period emerged out of ongoing efforts to enhance community participation, engagement, and transparency within the Air District per the 2013 Public Participation Plan. This public participation period does not limit or infringe on any rights the public already has to comment on any existing permit applications. This process enhances the ability of the public to make comments by establishing a set minimum 10-day period between the time a permit application is deemed complete and the time the Air District takes final action. This formal period provides assurance that submitted comments can be duly and thoroughly considered at a key stage of evaluation.

In order to improve transparency, the Air District has implemented and continues to implement updated tools for tracking permit application activity on the Air District website. The public can now access a description of all permit applications for new and modified sources of air pollution, as well as the current status of the application.

Future enhancements will include email notification subscriptions for new permit applications as they are received, enhanced guidance on how to effectively provide comments on permit applications, and additional permit application information.

BUDGET CONSIDERATION/FINANCIAL IMPACT

Enhancements to the Air District website to support the presentation of updated permit application information, provide additional public comment guidance, and email subscriptions services will be funded from the FYE2016 and FYE2017 My Air Online program budget.

Additional staff time in the Engineering Division will be required to respond to public inquiries and comments on permit applications. A need for new resources is not anticipated at this time. However, existing permit application evaluation timelines may be extended in order to appropriately respond to comments and inquiries from the public.

Respectfully submitted,

Jack P. Broadbent Executive Officer/APCO

Prepared by: <u>Jaime Williams</u> Reviewed by: <u>Damian Breen</u>